Truck and Transport Mechanic

Guide to Course Content

2026

1-877-363-0536
apprenticeship@gov.sk.ca
saskapprenticeship.ca

Saskatchewan Apprenticeship and Trade Certification Commission

Online: www.saskapprenticeship.ca

Recognition:
To promote transparency and consistency, this document has been adapted from the 2022 Truck and Transport Mechanic Red Seal Occupational Standard (RSOS) (Employment and Social Development Canada).

A complete version of the Occupational Standard can be found at www.red-seal.ca

STRUCTURE OF THE GUIDE TO COURSE CONTENT

To facilitate understanding of the occupation, this guide to course content contains the following sections:

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard detailing the essential skills and the level of training where the content is covered.

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities.

Task: distinct actions that describe the activities within a major work activity.

Sub-task: distinct actions that describe the activities within a task.

Training Profile Chart: a chart which outlines the model for Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training.

Technical Training Course Content for the Truck and Transport Mechanic trade: a chart which outlines the model for SATCC technical training sequencing. For the harmonized level of training, a cross reference to the Harmonized apprenticeship technical training sequencing, at the learning outcome level, is provided.

TRAINING REQUIREMENTS FOR THE TRUCK AND TRANSPORT MECHANIC TRADE

To graduate from each level of the apprenticeship program, an apprentice must successfully complete the required technical training and compile enough on-the-job experience to total at least 1800 hours each year. Total trade time required is 7200 hours and at least 4 years in the trade.

There are four levels of technical training delivered by Saskatchewan Polytechnic in Saskatoon.

Level One: 8 weeks
Level Two: 8 weeks
Level Three: 8 weeks
Level Four: 8 weeks

The information contained in this document details the technical training delivered for each level of apprenticeship. An apprentice spends approximately 15% of their apprenticeship term in a technical training institute learning the technical and theoretical aspects of the trade. The hours and percentages of technical and practical training may vary according to class needs and progress.

The content of the technical training components is subject to change without notice.

Entrance Requirements for Apprenticeship Training

Your grade twelve transcripts (with no modified classes) or GED 12 is your guarantee that you meet the educational entrance requirements for apprenticeship in Saskatchewan. In fact, employers prefer and recommend apprentices who have completed high school. This ensures the individual has all of the necessary skills required to successfully complete the apprenticeship program and receive journeyperson certification.

Individuals with “modified” or “general” classes in math or science do not meet our entry requirements. These individuals are required to take an entrance assessment prescribed by the SATCC.

English is the language of instruction in all apprenticeship programs and is the common language for business in Saskatchewan. Before admission, all apprentices and/or “upgraders” must be able to understand and communicate in the English language. Applicants whose first language is not English must have a minimum Canadian Language Benchmark Assessment of six (CLB6).

Note: A CLB assessment is valid for a one-year period from date of issue.

Designated Trade Name	**Math Credit** at the Indicated Grade Level❶	**Science Credit** at Grade Level
Truck and Transport Mechanic	Grade 11	Grade 10

❶ - (One of the following) WA – Workplace and Apprenticeship; or F – Foundations; or P – Pre-calculus, or a Math at the indicated grade level (Modified and General Math credits are not acceptable.).

*Applicants who have graduated in advance of 2015-2016, or who do not have access to the revised Science curricula will require a Science at the minimum grade level indicated by trade.

For information about high school curriculum, including Math and Science course names, please see: http://www.curriculum.gov.sk.ca/

Individuals not meeting the entrance requirements will be subject to an assessment and any required training.

TRUCK AND TRANSPORT MECHANIC
TASK MATRIX CHART

This chart outlines the blocks, tasks and sub-tasks from the 2022 Truck and Transport Mechanic Red Seal Occupational Standard (RSOS). Each sub-task details the corresponding essential skill and level of training where the content is covered. *

* 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	**1.03 Implements specific safety protocols for hybrid and electric vehicles (EV)** 1		
A-2 Uses and maintains tools and equipment	**2.01 Uses hand, power, measuring, testing, and diagnostic tools** 1,2	**2.02 Uses shop equipment** 1	**2.03 Uses hoisting, lifting and staging equipment** 1	**2.04 Uses welding and cutting equipment** 1,2	**2.05 Uses electronic devices and systems for diagnostics and programming** 1
A-3 Performs routine work practices	**3.01 Uses documentation and reference materials** 1, In Context in 2,3,4	**3.02 Maintains fluids and lubricants** 1, In Context in 2,3,4	**3.03 Services hoses, tubing, and fittings** 1, 2 In Context in 3,4	**3.04 Services filters** 1, In Context in 2,3,4	**3.05 Services bearings and seals** 2, In Context in 3,4
	3.06 Uses fasteners and sealing devices 1, In Context in 2,3,4				
A-4 Uses communication and mentoring techniques	**4.01 Uses communication techniques** 1	**4.02 Uses mentoring techniques** 4			

B – Services, Diagnoses and Repairs Engines and Supporting Systems

15%

B-5 Services, diagnoses and repairs base engines	5.01 Services base engines 3,4	5.02 Diagnoses base engines 3,4	5.03 Repairs base engines 3,4
B-6 Services, diagnoses and repairs lubrication systems	6.01 Services lubrication systems 1,3,4	6.02 Diagnoses lubrication systems 3,4	6.03 Repairs lubrication systems 3,4
B-7 Services, diagnoses and repairs intake systems	7.01 Services intake systems 3,4	7.02 Diagnoses intake systems 3,4	7.03 Repairs intake systems 3,4
B-8 Services, diagnoses and repairs exhaust systems	8.01 Services exhaust systems 3,4	8.02 Diagnoses exhaust systems 3,4	8.03 Repairs exhaust systems 3,4
B-9 Services, diagnoses and repairs engine management systems	9.01 Services engine management systems 3,4	9.02 Diagnoses engine management systems 3,4	9.03 Repairs engine management systems 3,4
B-10 Services, diagnoses and repairs fuel delivery systems	10.01 Services fuel delivery systems 3,4	10.02 Diagnoses fuel delivery systems 3,4	10.03 Repairs fuel delivery systems 3,4

B-11 Services, diagnoses and repairs engine retarder systems	11.01 Services engine retarder systems 3	11.02 Diagnoses engine retarder systems 3	11.03 Repairs engine retarder systems 3
B-12 Services, diagnoses and repairs cooling systems	12.01 Services cooling systems 3	12.02 Diagnoses cooling systems 3	12.03 Repairs cooling systems 3

C – Services, Diagnoses and Repairs Air Systems and Brake Systems 13%

C-13 Services, diagnoses and repairs air systems	13.01 Services air systems 1,2	13.02 Diagnoses air systems 1,2	13.03 Repairs air systems 1,2
C-14 Services, diagnoses and repairs brake systems	14.01 Services brake systems 1,2	14.02 Diagnoses brake systems 1,2	14.03 Repairs brake systems 1,2

D – Services, Diagnoses and Repairs Electrical and Electronic Systems 16%

D-15 Services, diagnoses and repairs battery systems	15.01 Services battery systems 1	15.02 Diagnoses battery systems 1	15.03 Repairs battery Systems 1

D-16 Services, diagnoses and repairs charging systems	16.01 Services charging systems 1,2	16.02 Diagnoses charging systems 1,2	16.03 Repairs charging systems 1,2
D-17 Services, diagnoses and repairs spark ignition systems	17.01 Services spark ignition systems 3	17.02 Diagnoses spark ignition systems 3	17.03 Repairs spark ignition systems 3
D-18 Services, diagnoses and repairs starting systems	18.01 Services starting systems 1,2	18.02 Diagnoses starting systems 1,2	18.03 Repairs starting Systems 1,2
D-19 Services, diagnoses and repairs electrical components and accessories	19.01 Services electrical components and accessories 1,2,3,4	19.02 Diagnoses electrical components and accessories 1,2,3,4	19.03 Repairs electrical components and accessories 1,2,3,4
D-20 Services, diagnoses and repairs vehicle management systems and electronic components	20.01 Services vehicle management systems and electronic components 2,3,4	20.02 Diagnoses vehicle management systems and electronic components 2,3,4	20.03 Repairs vehicle management systems and electronic components 2,3,4

E – Services, Diagnoses and Repairs Drive Trains 12%

E-21 Services, diagnoses and repairs clutches	21.01 Services clutches 2,3	21.02 Diagnoses clutches 2,3	21.03 Repairs clutches 2,3
E-22 Services, diagnoses and repairs manual transmissions and transfer cases	22.01 Services manual transmissions and transfer cases 2,3	22.02 Diagnoses manual transmissions and transfer cases 2,3	22.03 Repairs manual transmissions and transfer cases 2,3

E-23 Services, diagnoses and repairs automatic transmissions	**23.01 Services automatic transmissions** **3**	**23.02 Diagnoses automatic transmissions** **3**	**23.03 Repairs automatic transmissions** **3**
E-24 Services, diagnoses and repairs automated transmissions	**24.01 Services automated transmissions** **3,4**	**24.02 Diagnoses automated transmission** **3,4**	**24.03 Repairs automated transmissions** **3,4**
E-25 Services, diagnoses and driveline systems	**25.01 Services driveline system** **2,3**	**25.02 Diagnoses driveline systems** **2,3**	**25.03 Repairs driveline systems** **2,3**
E-26 Services, diagnoses and repairs drive axle assemblies	**26.01 Services drive axle assemblies** **2,3**	**26.02 Diagnoses drive axle assemblies** **2,3**	**26.03 Repairs drive axle assemblies** **2,3**
E-27 Services, diagnoses and repairs drive train retarders	**27.01 Services drive train retarders** **3**	**27.02 Diagnoses drive train retarders** **3**	**27.03 Repairs drive train retarders** **3**

F – Services, Diagnoses and Repairs Steering, Chassis/Frames, Suspensions, Tires, Wheels and Hubs

13%

F-28 Services, diagnose, and repairs steering systems	28.01 Services steering systems 1,2	28.02 Diagnoses steering systems 1,2	28.03 Repairs steering systems 1,2
F-29 Services, diagnoses, and repairs chassis/frames	29.01 Services chassis/frames 1,2	29.02 Diagnoses chassis/frames 1,2	29.03 Repairs chassis/frames 1,2
F-30 Services, diagnoses, and repairs suspensions	30.01 Services suspensions 1,2	30.02 Diagnoses suspensions 1,2	30.03 Repairs suspensions 1,2
F-31 Services, diagnoses, and repairs hitches and couplers	31.01 Services hitches and couplers 1,3	31.02 Diagnoses hitches and couplers 1,3	31.03 Repairs hitches and couplers 1,3
F-32 Services, diagnoses, and repairs tires, wheels and hubs	32.01 Services tires, wheels and hubs 1,2	32.02 Diagnoses tires, wheels and hubs 1,2	32.03 Repairs tires, wheels and hubs 1,2

G – Services, Diagnoses and Repairs Cabs

4%

G-33 Services, diagnoses, and repairs interior cab components	33.01 Services interior cab components 2	33.02 Diagnoses interior cab components 2	33.03 Repairs interior cab components 2

G-34 Services, diagnoses and repairs exterior cab components	34.01 Services exterior cab components 1	34.02 Diagnoses exterior cab components 1	34.03 Repairs exterior cab components 1

H – Services, Diagnoses and Repairs Trailers — 6%

H-35 Services, diagnoses and repairs trailer components and accessories	35.01 Services trailer components and accessories 2	35.02 Diagnoses trailer components and accessories 2	35.03 Repairs trailer components and accessories 2
H-36 Services, diagnoses and repairs heating and refrigeration systems	36.01 Services, heating and refrigeration systems 1,4	36.02 Diagnoses heating and refrigeration systems 1,4	36.03 Repairs heating and refrigeration systems 1,4

I – Services, Diagnoses and Repairs Climate Control Systems — 6%

I-37 Services, diagnoses and repairs heating and ventilation systems	37.01 Services heating and ventilation systems 1,2,4	37.02 Diagnoses heating and ventilation systems 1,2,4	37.03 Repairs heating and ventilation systems 1,2,4
I-38 Services, diagnoses and repairs air conditioning systems	38.01 Services air conditioning systems 1,2,4	38.02 Diagnoses air conditioning systems 1,2,4	38.03 Repairs air conditioning systems 1,2,4

J – Services, Diagnoses and Repairs Hydraulic Systems — 6%

J-39 Services, diagnoses and repairs hydraulic systems	39.01 Services hydraulic systems 1,2	39.02 Diagnoses hydraulic systems 1,2	39.03 Repairs hydraulic systems 1,2

K – Services, Diagnoses and Repairs Hybrid and Electric Vehicles (EV) — 3%

K-40 Services, diagnoses and repairs hybrid vehicles	40.01 Services hybrid vehicles 4 In Context in 2,3	40.02 Diagnoses hybrid vehicles 4 In Context in 2,3	40.03 Repairs hybrid vehicles 4 In Context in 2,3
K-41 Services, diagnoses and repairs electric vehicles (EV)	41.01 Services electric vehicles (EV) 4 In Context in 2,3	41.02 Diagnoses electric vehicles (EV) 4 In Context in 2,3	41.03 Repairs electric vehicles (EV) 4 In Context in 2,3

TRAINING PROFILE CHART

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

Level One	Transcript Code	Hours
Basic Tools	TOOL 145 – Theory	12
	TOOL 146 – Shop	12
Brake Systems	BRAK 111 – Theory	24
	BRAK 112 – Shop	36
Electrical	ELCT 100 – Theory	14
	ELCT 101 – Shop	16
Environmental Control Systems	HVAC 100	6
Hydraulics	HYDR 108 – Theory	24
	HYDR 109 – Shop	36
Steering Systems	STER 100 – Theory	12
	STER 101 – Shop	18
Structural Components	MAIN 102 – Theory	12
	MAIN 103 – Shop	18
		240

Level Two	Transcript Code	Hours
Braking Systems ABS	BRAK 206 – Theory	12
	BRAK 207 – Shop	18
Drivetrain Systems	DRTR 201 – Theory	24
	DRTR 202 – Shop	36
Electrical	ELCT 202 – Theory	12
	ELCT 203 – Shop	18
Hydraulics	HYDR 206 – Theory	12
	HYDR 207 – Shop	18
Steering and Directional Control Systems	STER 204 – Theory	12
	STER 205 – Shop	18
Welding OFC/SMAW/GMAW	WELD 235 –Theory	6
	WELD 236 – Shop	24
Truck and Trailer Systems	TRLR 200 – Theory	12
	TRLR 201 – Shop	18
		240

Level Three	Transcript Code	Hours
Alternate Fuels	FUEL 304 – Theory	12
	FUEL 305 – Shop	18
Electrical	ELCT 301 – Theory	14
	ELCT 302 – Shop	16
Engine and Engine Support Systems	ENGN 306 – Theory	55
	ENGN 307 – Shop	65
Powertrain Systems	TRNM 308 – Theory	24
	TRNM 309 – Shop	36
		240

Level Four	Transcript Code	Hours
Drivetrains	DRTR 400 – Theory	12
	DRTR 401 – Shop	18
Electrical	ELCT 400 – Theory	40
	ELCT 401 – Shop	50
Environmental Control Systems	HVAC 400 – Theory	12
	HVAC 401 – Shop	18
Fuel Systems	FUEL 404 – Theory	40
	FUEL 405 – Shop	50
		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 apprenticeship technical training sequencing, at the learning outcome level, is provided.

Sub-tasks listed are the minimum to be covered in a topic. Related sub-tasks not listed may be used as a reference and taught "in-context" in other topics.

Level One — 8 weeks — 240 hours

Basic Tools – Theory — 12 hours

- describe safety rules and regulations
- describe the purpose and care of shop and hand tools
- describe various types of fasteners, adhesives and sealing devices
- describe safety practices associated with welding and oxy-fuel cutting

Basic Tools – Shop — 12 hours

- demonstrate safety
- explain legislative regulations
- demonstrate use and care of hand tools and shop equipment
- demonstrate safety practices associated with welding and oxy-fuel cutting

RSOS topics covered in this section of training:

A-1 Performs safety-related functions
1.01 Maintains safe work environment
1.02 Uses personal protective equipment (PPE) and safety equipment

A-2 Uses and maintains tools and equipment
2.01 Uses hand, power, measuring, testing, and diagnostic tools
2.02 Uses shop equipment
2.03 Uses hoisting, lifting and staging equipment
2.04 Uses welding and cutting equipment

A-3 Performs routine work practices
3.01 Uses documentation and reference materials
3.03 Services hoses, tubing and fittings
3.06 Uses fasteners and sealing devices

A-4 Uses communication and mentoring techniques
4.01 Uses communication techniques

Brake Systems – Theory — 24 hours

- describe hydraulic brake system operation
- describe air brake system operation
- describe various types of park brake systems

Brake Systems – Shop — 36 hours

- evaluate hydraulic brake system operation
- evaluate air brake system operation
- evaluate various park brake systems
- conduct final adjustments and performance tests
- repair faults

RSOS topics covered in this section of training:

C-13 Services, diagnoses and repairs air systems
13.01 Services air systems
13.02 Diagnoses air systems
13.03 Repairs air systems

C-14 Services, diagnoses and repairs brake systems
14.01 Services brake systems
14.02 Diagnoses brake systems
14.03 Repairs brake systems

Electrical – Theory — 14 hours

- apply scientific principles to explain electrical theory and magnetism
- identify electrical circuit types and faults utilizing test equipment
- explain the function and operation of a lead acid battery

Electrical – Shop — 16 hours

- measure electrical values and check circuit operation
- evaluate a lead acid battery
- repair faults

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment
2.05 Uses electronic devices and systems for diagnostics and programming

D-15 Services, diagnoses and repairs battery systems
15.01 Services battery systems
15.02 Diagnoses battery systems
15.03 Repairs battery Systems

D-16 Services, diagnoses and repairs charging systems
16.01 Services charging systems
16.02 Diagnoses charging systems
16.03 Repairs charging systems

D-18 Services, diagnoses and repairs starting systems
18.01 Services starting systems
18.02 Diagnoses starting systems
18.03 Repairs starting systems

D-19 Services, diagnoses and repairs electrical components and accessories
19.01 Services electrical components and accessories
19.02 Diagnoses electrical components and accessories
19.03 Repairs electrical components and accessories

Environmental Control Systems – Theory — 6 hours

- complete the Heating, Refrigeration and Air Conditioning Institute's course on ozone depleting substances

RSOS topics covered in this section of training:

H-36 Services, diagnoses and repairs heating and refrigeration systems
36.01 Services heating and refrigeration systems
36.02 Diagnoses heating and refrigeration systems
36.03 Repairs heating and refrigeration systems

I-37 Services, diagnoses and repairs heating and ventilation systems
37.01 Services heating and ventilation systems
37.02 Diagnoses heating and ventilation systems
37.03 Repairs heating and ventilation systems

I-38 Services, diagnoses and repairs air conditioning systems
38.01 Services air conditioning systems
38.02 Diagnoses air conditioning systems
38.03 Repairs air conditioning systems

Hydraulics – Theory **24 hours**

- explain the fundamentals of a basic hydraulic system and related components
- interpret hydraulic symbol diagrams
- describe hydraulic system maintenance and testing procedures
- describe open and closed center hydraulic systems

Hydraulics – Shop **36 hours**

- service hydraulic system and various components
- test hydraulic systems using correct tools and procedures

RSOS topics covered in this section of training:

F-31 Services, diagnoses, and repairs hitches and couplers
31.01 Services hitches and couplers
31.02 Diagnoses hitches and couplers
31.03 Repairs hitches and couplers

J-39 Services, diagnoses and repairs hydraulic systems
39.01 Services hydraulic systems
39.02 Diagnoses hydraulic systems
39.03 Repairs hydraulic systems

Steering Systems – Theory **12 hours**

- explain basic wheel and frame alignment angles
- explain manual and integral steering system operation
- describe mounting procedures for tires, rims and hubs

Steering Systems – Shop **18 hours**

- perform a basic wheel alignment
- evaluate manual and integral power steering systems
- perform mounting procedures for tires, rims and hubs
- repair system faults

RSOS topics covered in this section of training:

C-13 Services, diagnoses and repairs air systems
13.01 Services air systems
13.02 Diagnoses air systems
13.03 Repairs air systems

F-28 Services, diagnoses and repairs steering systems
28.01 Services steering systems
28.02 Diagnoses steering systems
28.03 Repairs steering systems

F-30 Services, diagnoses and repairs suspensions
30.01 Services suspensions
30.02 Diagnoses suspensions
30.03 Repairs suspensions

F-32 Services, diagnoses and repairs tires, wheels and hubs
32.01 Services tires, wheels and hubs
32.02 Diagnoses tires, wheels and hubs
32.03 Repairs tires, wheels and hubs

Structural Components and Accessories – Theory — 12 hours

- describe preventative maintenance programs
- identify hoisting and rigging techniques
- describe tractor frame construction and suspension systems
- describe truck and trailer coupling and docking systems

Structural Components and Accessories – Shop — 18 hours

- perform preventative maintenance checks
- perform hoisting and rigging techniques
- repair various hitching and docking systems
- inspect frame and suspension systems

RSOS topics covered in this section of training:

A-1 Performs safety-related functions
1.01 Maintains safe work environment

A-2 Uses and maintains tools and equipment
2.01 Uses hand, power, measuring, testing, and diagnostic tools
2.03 Uses hoisting, lifting and staging equipment

A-3 Performs routine work practices
3.02 Maintains fluids and lubricants
3.04 Services filters

B-6 Services, diagnoses and repairs lubrication systems
6.01 Services lubrication systems

F-29 Services, diagnoses and repairs chassis/frames
29.01 Services chassis/frames
29.02 Diagnoses chassis/frames
29.03 Repairs chassis/frames

F-30 Services, diagnoses and repairs suspensions
30.01 Services suspensions
30.02 Diagnoses suspensions
30.03 Repairs suspensions

F-31 Services, diagnoses, and repairs hitches and couplers
31.01 Services hitches and couplers
31.02 Diagnoses hitches and couplers
31.03 Repairs hitches and couplers

G-34 Services, diagnoses and repairs exterior cab components
34.01 Services exterior cab components
34.02 Diagnoses exterior cab components
34.03 Repairs exterior cab components

Level Two — 8 weeks — 240 hours

Brake Systems ABS – Theory — **12 hours**

- describe antilock braking system components
- describe electric braking system components
- describe traction and stability control system components
- describe SGI safety inspection procedures for truck and trailers

Brake Systems ABS – Shop — **18 hours**

- evaluate antilock braking systems
- evaluate electric braking systems
- evaluate traction and stability control systems
- repair system faults
- perform SGI safety inspection

RSOS topics covered in this section of training:

C-13 Services, diagnoses and repairs air systems
13.01 Services air systems
13.02 Diagnoses air systems
13.03 Repairs air systems

C-14 Services, diagnoses and repairs brake systems
14.01 Services brake systems
14.02 Diagnoses brake systems
14.03 Repairs brake systems

D-19 Services, diagnoses and repairs electrical components and accessories
19.01 Services electrical components and accessories
19.02 Diagnoses electrical components and accessories
19.03 Repairs electrical components and accessories

D-20 Services, diagnoses and repairs vehicle management systems and electronic components
20.01 Services vehicle management systems and electronic components
20.02 Diagnoses vehicle management systems and electronic components
20.03 Repairs vehicle management systems and electronic components

Drivetrain Systems – Theory — **24 hours**

- identify various seals and bearing types
- discuss various clutch types
- discuss manual transmission operation
- discuss differential operation
- discuss planetary and final drives
- discuss driveline operation

Drivetrain Systems – Shop — **36 hours**

- perform the removal and replacement of various seals and bearings
- evaluate various clutch types
- evaluate manual transmission operation
- evaluate differential operation
- evaluate planetary and final drive systems
- evaluate driveline systems
- repair faults

RSOS topics covered in this section of training:

A-3 Performs routine work practices

3.05 Services bearings, bushing and seals

E-21 Services, diagnoses and repairs clutches
21.01 Services clutches
21.02 Diagnoses clutches
21.03 Repairs clutches

E-22 Services, diagnoses and repairs manual transmissions and transfer cases
22.01 Services manual transmissions and transfer cases
22.02 Diagnoses manual transmissions and transfer cases
22.03 Repairs manual transmissions and transfer cases

E-25 Services, diagnoses and repairs driveline systems
25.01 Services driveline system
25.02 Diagnoses driveline systems
25.03 Repairs driveline systems

E-26 Services, diagnoses and repairs drive axle assemblies
26.01 Services drive axle assemblies
26.02 Diagnoses drive axle assemblies
26.03 Repairs drive axle assemblies

Electrical – Theory — 12 hours

- explain the operation of a cranking system and related components
- explain the operation of an alternating current (AC) charging system and related components

Electrical – Shop — 18 hours

- evaluate cranking and charging systems
- repair faults

RSOS topics covered in this section of training:

D-16 Services, diagnoses and repairs charging systems
16.01 Services charging systems
16.02 Diagnoses charging systems
16.03 Repairs charging systems

D-18 Services, diagnoses and repairs starting systems
18.01 Services starting systems
18.02 Diagnoses starting systems
18.03 Repairs starting systems

D-19 Services, diagnoses and repairs electrical components and accessories
19.01 Services electrical components and accessories
19.02 Diagnoses electrical components and accessories
19.03 Repairs electrical components and accessories

Hydraulics – Theory — 12 hours

- describe the operation of the different types of flow control valves
- describe a power-beyond hydraulic systems
- describe open and closed loop hydrostatic systems

Hydraulics – Shop **18 hours**

- evaluate various types of hydraulic systems and flow control valves
- evaluate open and closed loop hydraulic systems
- repair faults

RSOS topics covered in this section of training:

J-39 Services, diagnoses and repairs hydraulic systems
39.01 Services hydraulic systems
39.02 Diagnoses hydraulic systems
39.03 Repairs hydraulic systems

Steering and Directional Control Systems – Theory **12 hours**

- explain the operating principles of tandem steering systems
- explain the operating principles of an auxiliary steering systems
- discuss pilot control and orbital steering systems

Steering and Directional Control Systems – Shop **18 hours**

- evaluate a tandem steering system
- evaluate an auxiliary steering systems
- evaluate pilot control and orbital steering systems
- repair system faults

RSOS topics covered in this section of training:

C-13 Services, diagnoses and repairs air systems
13.01 Services air systems
13.02 Diagnoses air systems
13.03 Repairs air systems

F-28 Services, diagnoses and repairs steering systems
28.01 Services steering systems
28.02 Diagnoses steering systems
28.03 Repairs steering systems

F-32 Services, diagnoses and repairs tires, wheels and hubs
32.01 Services tires, wheels and hubs
32.02 Diagnoses tires, wheels and hubs
32.03 Repairs tires, wheels and hubs

Truck and Trailer Systems – Theory **12 hours**

- describe trailer frame and suspension systems
- describe operational fundamentals of trailer heat, ventilation and air conditioning systems
- describe the operation of cab and engine heaters and auxiliary power generation units

Truck and Trailer Systems – Shop **18 hours**

- evaluate trailer frame and suspension systems
- evaluate trailer heating, ventilation and air conditioning systems
- evaluate the engine and cab heating and auxiliary power generation units
- repair defects

RSOS topics covered in this section of training:

A-3 Performs routine work practices
3.03 Services hoses, tubing and fittings

C-13 Services, diagnoses and repairs air systems
13.01 Services air systems
13.02 Diagnoses air systems
13.03 Repairs air systems

F-29 Services, diagnoses and repairs chassis/frames
29.01 Services chassis/frames
29.02 Diagnoses chassis/frames
29.03 Repairs chassis/frames

F-30 Services, diagnoses and repairs suspensions
30.01 Services suspensions
30.02 Diagnoses suspensions
30.03 Repairs suspensions

G-33 Services, diagnoses and repairs interior cab components
33.01 Services interior cab components
33.02 Diagnoses interior cab components
33.03 Repairs interior cab components

H-35 Services, diagnoses and repairs trailer components and accessories
35.01 Services trailer components and accessories
35.02 Diagnoses trailer components and accessories
35.03 Repairs trailer components and accessories

I-37 Services, diagnoses and repairs heating and ventilation systems
37.01 Services heating and ventilation systems
37.02 Diagnoses heating and ventilation systems
37.03 Repairs heating and ventilation systems

I-38 Services, diagnoses and repairs air conditioning systems
38.01 Services air conditioning systems
38.02 Diagnoses air conditioning systems
38.03 Repairs air conditioning systems

OFC/SMAW/GMAW Welding – Theory **6 hours**

- Identify safety considerations associated with oxy-fuel units, shielded metal arc welding and gas metal arc welding
- Describe the setup and operation of an oxy-fuel unit, shielded metal arc welding and gas metal arc welding equipment

OFC/SMAW/GMAW Welding – Shop **24 hours**

- Cut plate and gauge metal using oxy-fuel unit
- Weld ¼" material, T joint, horizontal fillet and surface build up using the SMAW process
- demonstrate use of GMAW in the horizontal and vertical down positions

RSOS topics covered in this section of training:

A-2 Uses and maintains tools and equipment
2.04 Uses welding and cutting equipment

F-29 Services, diagnoses and repairs chassis/frames
29.01 Services chassis/frames
29.02 Diagnoses chassis/frames
29.03 Repairs chassis/frames

Level Two topics from the RSOS that are taught in-context:

Routine Trade Activities
Hybrid Vehicles
Electric Vehicles (EV)

For details regarding the In-Context Topics, see page 33

Level Three — 8 weeks — 240 hours

Alternative Fuels – Theory — **12 hours**

- describe the ignition process of a spark ignition engine
- describe the fuel delivery process for various fuel types

Alternative Fuels – Shop — **18 hours**

- perform servicing, diagnoses and replacement of spark ignition components
- perform servicing, diagnosing and replacement of components related to fuel delivery

RSOS topics covered in this section of training:

B-9 Services, diagnoses and repairs engine management systems
9.01 Services engine management systems
9.02 Diagnoses engine management systems
9.03 Repairs engine management systems

B-10 Services, diagnoses and repairs fuel delivery systems
10.01 Services fuel delivery systems
10.02 Diagnoses fuel delivery systems
10.03 Repairs fuel delivery systems

D-17 Services, diagnoses and repairs spark ignition systems
17.01 Services spark ignition systems
17.02 Diagnoses spark ignition systems
17.03 Repairs spark ignition systems

Electrical – Theory — **14 hours**

- explain common electrical components and their applications
- interpret wiring diagrams
- explain common electrical faults

Electrical – Shop — **16 hours**

- construct electrical circuits
- measure electrical values
- analyze circuit operation

RSOS topics covered in this section of training:

D-19 Services, diagnoses and repairs electrical components and accessories
19.01 Services electrical components and accessories
19.02 Diagnoses electrical components and accessories
19.03 Repairs electrical components and accessories

D-20 Services, diagnoses and repairs vehicle management systems and electronic components
20.01 Services vehicle management systems and electronic components
20.02 Diagnoses vehicle management systems and electronic components
20.03 Repairs vehicle management systems and electronic components

Engine and Engine Support Systems – Theory **55 hours**

- describe the operational characteristics of a diesel engine
- describe metallurgy and fluid analysis as it pertains to diesel engines
- describe the operational characteristics of various diesel engine support systems
- describe the procedures involved in a diesel engine overhaul
- describe the processes involved in determining component serviceability.
- describe diesel engine failure diagnosis

Engine and Engine Support Systems – Shop **65 hours**

- evaluate a diesel engine for potential faults prior to disassembly
- disassemble engine using correct procedures and shop practices
- evaluate engine components for serviceability
- assemble a diesel engine using proper procedures and serviceable components
- evaluate engines after assembly and inspect for potential faults
- evaluate operating engine for faults
- repair defects as required

RSOS topics covered in this section of training:

B-5 Services, diagnoses and repairs base engines
5.01 Services base engines
5.02 Diagnoses base engines
5.03 Repairs base engines

B-6 Services, diagnoses and repairs lubrication systems
6.01 Services lubrication systems
6.02 Diagnoses lubrication systems
6.03 Repairs lubrication systems

B-7 Services, diagnoses and repairs intake systems
7.01 Services intake systems
7.02 Diagnoses intake systems
7.03 Repairs intake systems

B-8 Services, diagnoses and repairs exhaust systems
8.01 Services exhaust systems
8.02 Diagnoses exhaust systems
8.03 Repairs exhaust systems

B-9 Services, diagnoses and repairs engine management systems
9.01 Services engine management systems
9.02 Diagnoses engine management systems
9.03 Repairs engine management systems

B-10 Services, diagnoses and repairs fuel delivery systems
10.01 Services fuel delivery systems
10.02 Diagnoses fuel delivery systems
10.03 Repairs fuel delivery systems

B-11 Services, diagnoses and repairs engine retarder systems
11.01 Services engine retarder systems
11.02 Diagnoses engine retarder systems
11.03 Repairs engine retarder systems

B-12 Services, diagnoses and repairs cooling system
12.01 Services cooling system
12.02 Diagnoses cooling system
12.03 Repairs cooling system

Powertrain Systems – Theory **24 hours**

- describe operating principles of a manual transmission
- describe operating principles of an automatic transmission

Powertrain Systems – Shop **36 hours**

- evaluate manual transmissions
- evaluate automatic transmissions
- repair defects

RSOS topics covered in this section of training:

B-10 Services, diagnoses and repairs fuel delivery systems
10.01 Services fuel delivery systems
10.02 Diagnoses fuel delivery systems
10.03 Repairs fuel delivery systems

D-20 Services, diagnoses and repairs vehicle management systems and electronic components
20.01 Services vehicle management systems and electronic components
20.02 Diagnoses vehicle management systems and electronic components
20.03 Repairs vehicle management systems and electronic components

E-21 Services, diagnoses and repairs clutches
21.01 Services clutches
21.02 Diagnoses clutches
21.03 Repairs clutches

E-22 Services, diagnoses and repairs manual transmissions and transfer cases
22.01 Services manual transmissions and transfer cases
22.02 Diagnoses manual transmissions and transfer cases
22.03 Repairs manual transmissions and transfer cases

E-23 Services, diagnoses and repairs automatic transmissions
23.01 Services automatic transmissions
23.02 Diagnoses automatic transmissions
23.03 Repairs automatic transmissions

E-24 Services, diagnoses and repairs automated transmissions
24.01 Services automated transmissions
24.02 Diagnoses automated transmission
24.03 Repairs automated transmissions

E-25 Services, diagnoses and driveline systems
25.01 Services driveline system
25.02 Diagnoses driveline systems
25.03 Repairs driveline systems

E-26 Services, diagnoses and repairs drive axle assemblies
26.01 Services drive axle assemblies
26.02 Diagnoses drive axle assemblies
26.03 Repairs drive axle assemblies

E-27 Services, diagnoses and repairs drive train retarders
27.01 Services drive train retarders
27.02 Diagnoses drive train retarders
27.03 Repairs drive train retarders

F-31 Services, diagnoses, and repairs hitches and couplers
31.01 Services hitches and couplers
31.02 Diagnoses hitches and couplers
31.03 Repairs hitches and couplers

Level Three topics from the RSOS that are taught in-context:

Routine Trade Activities
Hybrid Vehicles
Electric Vehicles (EV)
For details regarding the In-Context Topics, see page 33

Level Four — 8 weeks — 240 hours

Drivetrains – Theory — 12 hours

- describe the operation of a hybrid drive system
- describe the operating principles of an automated manual transmission
- describe electronic controls related to automated shift technology

Drivetrains – Shop — 18 hours

- evaluate hybrid drive systems
- evaluate automated manual transmissions
- diagnose electronic faults

RSOS topics covered in this section of training:

E-24 Services, diagnoses and repairs automated transmissions
24.01 Services automated transmissions
24.02 Diagnoses automated transmission
24.03 Repairs automated transmissions

K-40 Services, diagnoses and repairs hybrid vehicles
40.01 Services hybrid vehicles
40.02 Diagnoses hybrid vehicles
40.03 Repairs hybrid vehicles

K-41 Services, diagnoses and repairs electric vehicles (EV)
41.01 Services electric vehicles (EV)
41.02 Diagnoses electric vehicles (EV)
41.03 Repairs electric vehicles (EV)

Electrical – Theory — 40 hours

- apply scientific principles to explain electrical theory and magnetism
- identify electrical circuit types and faults utilizing test equipment
- explain the function and operation of a lead-acid battery
- explain the operation of cranking system and related components
- explain the operation of alternating current (AC) charging systems and related components
- explain common electrical and electronic components and their applications
- interpret wiring diagrams
- describe operation of electrical accessories and engine control circuits
- describe basic computer components using correct terminology
- explain operation of various electronic control systems and related components

Electrical – Shop — 50 hours

- diagnose electrical faults
- evaluate a lead acid battery
- evaluate an alternating current (AC) charging system and related components
- evaluate a cranking system and related components
- utilize wiring diagrams for fault diagnosis
- troubleshoot the accessory systems and engine control circuits
- operate various electronic control systems to check for proper function
- utilize diagnostic equipment
- repair defects

RSOS topics covered in this section of training:

D-19 Services, diagnoses and repairs electrical components and accessories
19.01 Services electrical components and accessories
19.02 Diagnoses electrical components and accessories
19.03 Repairs electrical components and accessories

D-20 Services, diagnoses and repairs vehicle management systems and electronic components
20.01 Services vehicle management systems and electronic components
20.02 Diagnoses vehicle management systems and electronic components
20.03 Repairs vehicle management systems and electronic components

K-41 Services, diagnoses and repairs electric vehicles (EV)
41.01 Services electric vehicles (EV)
41.02 Diagnoses electric vehicles (EV)
41.03 Repairs electric vehicles (EV)

Environmental Control Systems – Theory — 12 hours

- describe the operation of heating, ventilation and air conditioning systems
- identify various heating and air conditioning components
- describe proper usage of test equipment

Environmental Control Systems – Shop — 18 hours

- demonstrate service procedures
- repair air conditioning and heating components
- repair air conditioning systems

RSOS topics covered in this section of training:

H-36 Services, diagnoses and repairs heating and refrigeration systems
36.01 Services, heating and refrigeration systems
36.02 Diagnoses heating and refrigeration systems
36.03 Repairs heating and refrigeration systems

I-37 Services, diagnoses and repairs heating and ventilation systems
37.01 Services heating and ventilation systems
37.02 Diagnoses heating and ventilation systems
37.03 Repairs heating and ventilation systems

I-38 Services, diagnoses and repairs air conditioning systems
38.01 Services air conditioning systems
38.02 Diagnoses air conditioning systems
38.03 Repairs air conditioning systems

Fuel Systems – Theory — 40 hours

- describe preventive maintenance procedures for diesel fuel storage and delivery systems
- describe proper procedures to diagnose faults in fuel delivery and control systems
- describe proper procedures to inspect, adjust or repair fuel delivery and control systems
- describe the procedures involved in performance testing on diesel engines

Fuel Systems – Shop **50 hours**

- perform preventative maintenance
- evaluate diesel injection delivery and control components
- evaluate an operating diesel engine
- conduct performance testing
- repair faults

RSOS topics covered in this section of training:

B-5 Services, diagnoses and repairs base engines
5.01 Services base engines
5.02 Diagnoses base engines
5.03 Repairs base engines

B-6 Services, diagnoses and repairs lubrication systems
6.01 Services lubrication systems
6.02 Diagnoses lubrication systems
6.03 Repairs lubrication systems

B-7 Services, diagnoses and repairs intake systems
7.01 Services intake systems
7.02 Diagnoses intake systems
7.03 Repairs intake systems

B-8 Services, diagnoses and repairs exhaust systems
8.01 Services exhaust systems
8.02 Diagnoses exhaust systems
8.03 Repairs exhaust systems

B-9 Services, diagnoses and repairs engine management systems
9.01 Services engine management systems
9.02 Diagnoses engine management systems
9.03 Repairs engine management systems

B-10 Services, diagnoses and repairs fuel delivery systems
10.01 Services fuel delivery systems
10.02 Diagnoses fuel delivery systems
10.03 Repairs fuel delivery systems

Level Four topics from the RSOS that are taught in-context:

Routine Trade Activities

For details regarding the In-Context Topics, see page 33

IN-CONTEXT TOPICS

In-context means learning that has already taken place and is being applied to the applicable task. Learning outcomes for in-context topics are accomplished in other topics in that level.

A-3 Performs routine work practices
3.01 Uses documentation and reference materials
3.02 Maintains fluids and lubricants
3.03 Services hoses, tubing and fittings
3.04 Services filters
3.05 Services bearings and seals
3.06 Uses fasteners and sealing devices

K-40 Services, diagnoses and repairs hybrid vehicles
40.01 Services hybrid vehicles
40.02 Diagnoses hybrid vehicles
40.03 Repairs hybrid vehicles

K-41 Services, diagnoses and repairs electric vehicles (EV)
41.01 Services electric vehicles (EV)
41.02 Diagnoses electric vehicles (EV)
41.03 Repairs electric vehicles (EV)