



8703

APPLIED DIAGNOSTIC
STRATEGIES (12D)

40S/40E/40M

An Automotive Technology Course

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Course Description

A student wanting to expand skills in the automotive industry must be able to apply diagnostic strategies to a variety of vehicle systems and components. The student will demonstrate the ability to diagnose and correct customer concerns and to complete vehicle repairs to accepted industry standards. The student will also learn about body components and trim. This course focuses on the following unit in the Apprenticeship Manitoba Level 1 technical training:

- Unit A12: Body Components and Trim

Goal 1: Describe and apply appropriate **health and safety** practices.

GLO 1.1: Describe and apply appropriate **health and safety** practices.

- SLO 12D.1.1.1 Adhere to safe practices and procedures for facilities, processes, materials, tools, and equipment.
- SLO 12D.1.1.2 Identify the process for reporting injuries.
- SLO 12D.1.1.3 Identify hazards and adhere to safe work practices pertaining to hoisting and lifting.
- SLO 12D.1.1.4 Create and maintain a safe and organized working environment.
- SLO 12D.1.1.5 Demonstrate the ability to follow safety information on supplier labels.
- SLO 12D.1.1.6 Demonstrate the ability to locate first aid and eyewash stations.
- SLO 12D.1.1.7 Identify hazards and describe safe work practices pertaining to the use of tools and equipment. (A3.1)
- SLO 12D.1.1.8 Describe hybrid vehicle safety hazards. (A13.2)
 - properly tag out the vehicle
 - fire hazards
 - electrocution hazards
 - electrolyte hazards
 - use of hybrid identification markers
 - working environment
 - dry floor
 - with a partner

SLO 12D.1.1.9 Demonstrate awareness of the long-term health concerns related to the automotive service industry.

GLO 1.2: Demonstrate awareness of safety as it pertains to the ***Trade Safety Awareness Curriculum for Level 1 Apprentices.***

No applicable SLOs.

Goal 2: Select, use, and manage **tools, equipment, materials, and consumables.**

GLO 2.1: Select, use, and manage **tools and equipment.**

SLO 12D.2.1.1 Demonstrate the ability to select, operate, and maintain shop tools and equipment used in applied diagnostic strategies.

GLO 2.2: Select, use, and manage **materials and consumables.**

No applicable SLOs.

Goal 3: **Describe, inspect, diagnose, service, and repair** automotive components and systems.

GLO 3.1: Describe automotive components and systems.

SLO 12D.3.1.1 Define terminology associated with body components and trim. (A12.1)

SLO 12D.3.1.2 Identify hazards and describe safe work practices pertaining to body components and trim. (A12.2)

- restraint systems

SLO 12D.3.1.3 Identify tools and equipment relating to body components and trim, and describe their applications and procedures for use. (A12.3)

SLO 12D.3.1.4 Explain the principles of basic aerodynamics related to body design. (A12.4)

SLO 12D.3.1.5 Identify body components and accessories, and describe their purpose and operation. (A12.5)

- interior
- exterior

- SLO 12D.3.1.6 Identify types of electrical/electronic systems, and describe their components and operation. (A12.6)
- locks
 - latches
 - windows
- SLO 12D.3.1.7 Identify materials used to dampen or interrupt vibration. (A12.8)
- tapes
 - adhesives
 - insulators
- SLO 12D.3.1.8 Identify types of seals, adhesives, cleaners, and sealing materials, and describe their applications and procedures for use. (A12.10)
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GLO 3.2: Inspect and diagnose automotive components and systems.

- SLO 12D.3.2.1 Demonstrate the ability to verify and document a customer complaint.
- SLO 12D.3.2.2 Demonstrate the ability to select the appropriate diagnostic strategies to isolate the cause of a customer complaint.
- SLO 12D.3.2.3 Demonstrate the ability to interpret diagnostic test results.
- SLO 12D.3.2.4 Demonstrate the ability to determine additional maintenance or repairs required.
- SLO 12D.3.2.5 Demonstrate the ability to select an appropriate repair procedure to correct a customer complaint.
- SLO 12D.3.2.6 Identify types and sources of noise, vibration, and harshness (NVH). (A12.7)
- chuckles
 - rattles
 - knocks and whines
 - offensive noises
- SLO 12D.3.2.7 Identify types and sources of wind and water leaks. (A12.9)
- SLO 12D.3.2.8 Describe and demonstrate the procedures used to diagnose body components and trim. (A12.11)
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GLO 3.3: Service and repair automotive components and systems.

- SLO 12D.3.3.1 Demonstrate the ability to complete required repairs.
- SLO 12D.3.3.2 Demonstrate the ability to verify and document repairs.
- SLO 12D.3.3.3 Describe and demonstrate the procedures used to adjust, repair, and/or replace body components and trim.
(A12.12)

Goal 4: Describe and apply transferable **cross-curricular** knowledge and skills.

GLO 4.1: Describe and apply knowledge and skills from **information and communication technologies**.

- SLO 12D.4.1.1 Demonstrate awareness of shop management software.
- SLO 12D.4.1.2 Demonstrate the ability to use online resources to find technical bulletins and other information related to automotive service and repair.
- SLO 12D.4.1.3 Demonstrate an understanding of the methods to reprogram or update control modules.
- SLO 12D.4.1.4 Demonstrate the ability to select and interpret the service information documents relevant to the fault.
- SLO 12D.4.1.5 Demonstrate the ability to interpret service information and bulletins.

GLO 4.2: Describe and apply knowledge and skills from the **sciences**.

No applicable SLOs.

GLO 4.3: Read, interpret, and communicate information.

No applicable SLOs.

GLO 4.4: Describe and apply knowledge and skills from **mathematics**.

No applicable SLOs.

Goal 5: Demonstrate an understanding of **sustainability**.

GLO 5.1: Demonstrate an understanding of **sustainability**.

No applicable SLOs.

Goal 6: Demonstrate awareness of **ethical and legal standards**.**GLO 6.1:** Demonstrate awareness of **ethical and legal standards**.

- SLO 12D.6.1.1 Demonstrate awareness of liability concerns related to automotive systems and service.
- SLO 12D.6.1.2 Demonstrate ethical behaviour while working on customers' vehicles.

Goal 7: Demonstrate **employability skills**.**GLO 7.1:** Demonstrate **employability skills**.

- SLO 12D.7.1.1 Demonstrate problem-solving skills.
- SLO 12D.7.1.2 Demonstrate critical-thinking skills.
- SLO 12D.7.1.3 Demonstrate regular attendance and punctuality.
- SLO 12D.7.1.4 Demonstrate accountability by taking responsibility for their actions.
- SLO 12D.7.1.5 Demonstrate adaptability, initiative, and effort.
- SLO 12D.7.1.6 Demonstrate the ability to accept and follow directions and feedback.
- SLO 12D.7.1.7 Demonstrate teamwork skills.
- SLO 12D.7.1.8 Demonstrate the ability to stay on task and effectively use time in class and shop environments.
- SLO 12D.7.1.9 Communicate respectfully and effectively with coworkers and customers.

GLO 7.2: Demonstrate an understanding of the **business operation** of a repair/service facility.

- SLO 12D.7.2.1 Demonstrate an understanding of the procedures used to prepare and/or complete trade-related documents.
- SLO 12D.7.2.2 Demonstrate the ability to prepare estimates and communicate information to customers.
- SLO 12D.7.2.3 Identify audiences and describe techniques for effective verbal and non-verbal communication. (A4.1)
 - apprentices
 - other tradespersons
 - colleagues
 - supervisors
 - clients

- SLO 12D.7.2.4 Identify types of communication devices and describe their purpose and operation. (A4.2)
- portable and stationary radios
 - cellular phones and mobility devices
 - computers
 - digital camera
- SLO 12D.7.2.5 Describe the importance of communicating job requirements. (A4.3)
- SLO 12D.7.2.6 Identify types of trade-related documents and describe their applications. (A4.4)
- codes and standards
 - company policies

Goal 8: Demonstrate an understanding of **educational and career opportunities**.

GLO 8.1: Demonstrate an understanding of **educational and career opportunities**.

- SLO 12D.8.1.1 Demonstrate an understanding of career opportunities related to emerging automotive technology.
- SLO 12D.8.1.2 Demonstrate the skills and resources used to obtain and sustain employment in the automotive service and repair industry.

Goal 9: Demonstrate awareness of the **evolution, technological progression, and emerging trends** in the automotive industry.

GLO 9.1: Demonstrate awareness of the **evolution, technological progression, and emerging trends** in the automotive industry.

- SLO 12D.9.1.1 Demonstrate an understanding of the evolution, technological progression, and emerging trends in diagnostic strategies.
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