



8703

**APPLIED DIAGNOSTIC
STRATEGIES (12D)**

40S/40E/40M

An Automotive Technology Course

8703: APPLIED DIAGNOSTIC STRATEGIES (12D) 40S/40E/40M

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 students will demonstrate the ability to diagnose and correct customer concerns and to complete vehicle repairs to accepted industry standards.

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 Safely perform battery service.
- SLO 12D.1.1.2 Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).
- SLO 12D.1.1.3 Identify the safety requirements as they apply to WHMIS. (A2.9) (Level 1)
- SLO 12D.1.1.4 Describe the purpose of Material Safety Data Sheets (MSDS).
- SLO 12D.1.1.5 Demonstrate the ability to follow safety information on supplier labels.
- SLO 12D.1.1.6 Follow safe practices and procedures for facilities, processes, materials, tools, and equipment used in an automotive facility.
- SLO 12D.1.1.7 Locate first aid and eyewash station.
- SLO 12D.1.1.8 Recognize, report, and control hazards (e.g., electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)
- SLO 12D.1.1.9 Identify and control hazards. (A2.10) (Level 1)
- SLO 12D.1.1.10 Identify the process for reporting injuries.
- SLO 12D.1.1.11 Identify ergonomically correct procedures to avoid injury (e.g., stress, strain). (A2.5) (Level 1)
- SLO 12D.1.1.12 Describe hybrid vehicle safety hazards. (G1.2) (Level 1)
- SLO 12D.1.1.13 Describe the importance of using Personal Protective Equipment (PPE), and identify PPE and procedures related to PPE. (A2.2) (TSA 16)
- SLO 12D.1.1.14 Outline the safety principles for working on and around electrical or energized equipment. (A2.3) (TSA 18)

SLO 12D.1.1.15	Identify fire safety, and outline workplace fire safety principles. (A4.4) (TSA 19)
SLO 12D.1.1.16	Identify the hazards in confined spaces and the preparation needed to work in them. (A2.7) (TSA 20)
SLO 12D.1.1.17	Identify safety and health requirements. (A2.1) (Level 1)
SLO 12D.1.1.18	Identify First Aid/CPR. (A2.8) (Level 1)
SLO 12D.1.1.19	Identify hazards, and describe safe work practices pertaining to the use of tools and equipment. (A3.1) (Level 1)
SLO 12D.1.1.20	Identify hazards and describe safe work practices pertaining to hoisting and lifting. (A4.2) (Level 1)
SLO 12D.1.1.21	Create and maintain a safe and organized working environment.
SLO 12D.1.1.22	Identify hazards, and describe safe work practices pertaining to body components and trim. (F1.2) (Level 1)

GLO 1.2: Demonstrate awareness of safety as it pertains to the *Trade Safety Awareness Manual*.

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	Select, operate, and maintain shop tools and equipment used in applied diagnostic strategies.
SLO 12D.2.1.2	Identify tools and equipment related to body components and trim, and describe their applications and procedures for use. (F1.3) (Level 1)

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

SLO 12D.2.2.1	Identify materials used to dampen or interrupt vibration. (F1.8) (Level 1)
SLO 12D.2.2.2	Identify types of seals, adhesives, cleaners, and sealing materials, and describe their applications and procedures for use. (F1.10) (Level 1)

GLO 2.3: Demonstrate **welding and cutting**.

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 Identify types of accessory drive systems, and describe their components and operation. (B1.4) (Level 1)
 - SLO 12D.3.1.2 Define terminology associated with body components and trim. (F1.1) (Level 1)
 - SLO 12D.3.1.3 Explain the principles of basic aerodynamics related to body design. (F1.4) (Level 1)
 - SLO 12D.3.1.4 Identify body components and accessories, and describe their purpose and operation. (F1.5) (Level 1)
 - SLO 12D.3.1.5 Identify types of vehicle components and accessories requiring operational checks. (A10.4) (Level 1)
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GLO 3.2: Inspect and diagnose automotive components and systems.

- SLO 12D.3.2.1 Select an appropriate repair procedure to correct customer complaint.
 - SLO 12D.3.2.2 Determine additional maintenance or repairs required.
 - SLO 12D.3.2.3 Select the appropriate diagnostic strategies to isolate cause of customer complaint.
 - SLO 12D.3.2.4 Perform a comprehensive inspection of a vehicle to determine the vehicle's condition (e.g., seasonal inspections, potential purchase).
 - SLO 12D.3.2.5 Interpret diagnostic test results.
 - SLO 12D.3.2.6 Identify types and sources of noise, vibration, and harshness (NVH). (F1.7) (Level 1)
 - SLO 12D.3.2.7 Identify types and sources of wind and water leaks. (F1.9) (Level 1)
 - SLO 12D.3.2.8 Describe and demonstrate the procedures used to diagnose body components and trim. (F1.11) (Level 1)
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GLO 3.3: Service and repair automotive components and systems.

- SLO 12D.3.3.1 Verify and document customer complaint.
 - SLO 12D.3.3.2 Complete required repairs.
 - SLO 12D.3.3.3 Inspect vehicle to determine additional maintenance required.
 - SLO 12D.3.3.4 Describe and demonstrate the procedures used to adjust, repair, and/or replace body components and trim. (F1.12) (Level 1)
 - SLO 12D.3.3.5 Verify and document repairs.
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Goal 4: Describe and apply the transferable **cross-curricular** knowledge and skills.

GLO 4.1: Demonstrate the application of **information and communication technologies**.

- SLO 12D.4.1.1 Demonstrate awareness of shop management software (e.g., electronic work order software).
 - SLO 12D.4.1.2 Research topics related to automotive service, repair, and technical bulletins using online resources (e.g., Internet, CDX).
 - SLO 12D.4.1.3 Describe methods of re-programming or updating control modules.
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GLO 4.2: Read, interpret, and communicate information.

- SLO 12D.4.2.1 Select and interpret the service information documents relevant to the fault.
 - SLO 12D.4.2.2 Interpret service information and bulletins.
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GLO 4.3: Demonstrate **mathematical skills**.

- SLO 12D.4.3.1 Describe the practical importance of math disciplines to the automotive service technician trade. (A7.1) (Level 1)
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GLO 4.4: Demonstrate skills in the **sciences**.

No applicable SLOs.

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

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

- SLO 12D.5.5.1 Discuss long-term health concerns related to the automotive service industry.

Goal 6: Follow ethical and legal standards.**GLO 6.1: Follow ethical and legal standards.**

- SLO 12D.6.1.1 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 Describe the procedures used to prepare and/or complete trade-related documents. (A6.4) (Level 1)
- SLO 12D.7.2.2 Prepare estimates and communicate information to customer.

Goal 8: Understand educational and career opportunities.**GLO 8.1: Understand educational and career opportunities.**

- SLO 12D.8.1.1 Explore career opportunities related to emerging automotive technology.
- SLO 12D.8.1.2 Describe the Manitoba Automotive Service Technician Apprenticeship program. (A1.2) (Level 1)
- SLO 12D.8.1.3 Describe special opportunities and challenges re: automotive service technician training. (A1.3) (Level 1)

Goal 9: Explore evolution, technological progression, and emerging trends.

GLO 9.1: Explore evolution, technological progression, and emerging trends.

- SLO 12D.9.1.1 Demonstrate an understanding of the evolution, technological progression, and emerging trends in diagnostic strategies.
 - SLO 12D.9.1.2 Explore emerging automotive technology.
 - SLO 12D.9.1.3 Describe emerging vehicle designs.
 - SLO 12D.9.1.4 Explore material selection used in vehicle manufacturing.
 - SLO 12D.9.1.5 Describe emerging vehicle safety technologies.
 - SLO 12D.9.1.6 Describe emerging technologies in computerized vehicle systems management.
 - SLO 12D.9.1.7 Identify emerging diagnostic technologies.
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