



Technology Education Senior Years Technology Program

Grades 9 to 12 Automotive Technology Manitoba Curriculum Framework of Outcomes (August 2014 Unedited Draft)

Student Learning Outcomes Related to Sustainable Development

(Note that the Automotive Technology program is comprised of nine courses. The courses are structured using goals, General Learning Outcomes, and Specific Learning Outcomes.)

Grade 9

8695: Introduction to Automotive Technology 15S/15E/15M, 10S/10E/10M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

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

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

Identify the automotive service and repair industry's sustainability practices and impact on the environment.

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

GLO 9.1 Explore evolution, technological progression and emerging trends.

Demonstrate an awareness of the evolution, technological progression, and emerging trends in automotive technology.

Grade 10

8696 **Automotive Systems & Service** 20S/20E/20M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

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

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

Describe and apply efficient materials usage and disposal practices.

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

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

Identify changes to vehicle design and their affect on safety, fuel economy, emissions, and vehicle performance.

Grade 11

8697 **Engine Fundamentals & Service** 30S/30E/30M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

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

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

Demonstrate an understanding of how and why lightweight and recyclable materials are used in vehicle production.

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

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

Demonstrate an awareness of legislation related to automotive systems and service.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in engine fundamentals and service.

8698 Chassis Fundamentals & Service 30S/30E/30M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

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

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

Discuss the impact of chemical hazards on the environment.

Identify recycling processes for materials.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in chassis fundamentals and service.

8699 Drive Train Fundamentals & Service 30S/30E/30M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

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

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

Demonstrate knowledge of efficient material usage to reduce waste and its impact on the environment.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in drive train fundamentals and service.

Grade 12

8700 Automotive Electrical Systems 40S/40E/40M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

Goal 5: Demonstrate understanding of **sustainability** as it pertains to automotive technology.

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

Describe and apply efficient materials usage and disposal practices.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in automotive electric systems.

Describe emerging technologies related to automotive charging systems.

Describe emerging battery technology.

8701 Vehicle Systems Part 1 40S/40E/40M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

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

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

Demonstrate an awareness of legislation related to automotive systems and service.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in vehicle systems.

Describe the changes in technology related to computerized vehicle systems.

Describe emerging technologies related to automotive ignition systems.

8702 Vehicle Systems Part 2 40S/40E/40M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

Goal 5: Demonstrate understanding of **sustainability** as it pertains to automotive technology.

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

Describe the requirements and responsibilities for proper battery recycling.

Discuss the impact of chemical hazards on the environment.

Discuss the relationship between sustainability and the production and use of electric and hybrid-electric vehicles.

Discuss the relationship between emission controls and environmental sustainability.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in vehicle systems.

8703 **Applied Diagnostic Strategies** 40S/40E/40M

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

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

Demonstrate awareness of the principles of Workplace Hazardous Materials Information Systems (WHMIS).

Follow safe practices and procedures for facilities, processes, materials, tools and equipment used in an automotive shop.

Recognize report and control hazards (e.g. electrical, ergonomic, material handling, chemicals, and spills). (A2.6) (Level 1)

Goal 5: Demonstrate understanding of **sustainability** as it pertains to automotive technology.

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

Discuss long-term health concerns related to the automotive service industry.

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

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

Demonstrate an understanding of the evolution, technological progression, and emerging trends in diagnostic strategies.

Explore emerging automotive technology.

Describe emerging vehicle designs.

Explore material selection used in vehicle manufacturing.

Describe emerging vehicle safety technology.

Describe emerging technologies in computerized vehicle systems management.

Identify emerging diagnostic technologies.