



9028

EXPLORATION OF COLLISION
REPAIR AND REFINISHING
TECHNOLOGY (9)

15S/15E/15M

10S/10E/10M

A Collision Repair and Refinishing Technology Course

9028: EXPLORATION OF COLLISION REPAIR AND REFINISHING TECHNOLOGY (9) 15S/15E/15M AND 10S/10E/10M

Course Description

This is an optional course intended for students wishing to sample the trade. The emphasis is on hands-on learning activities. Students will learn to follow safety procedures, select and use common hand and power tools, operate a metal inert gas (MIG) welder on sheet metal, repair minor damage, and prepare panels for painting.

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

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

- SLO 9.1.1.1: Identify safety and health requirements. (A2.1)
- SLO 9.1.1.2: Identify personal protective equipment (PPE) and procedures and describe the importance of using them. (A2.2) (TSA 16)
- SLO 9.1.1.3: Identify electrical safety and outline the safety principles for working on and around electrical equipment. (A2.3) (TSA 18)
- SLO 9.1.1.4: Identify fire safety practices and outline workplace fire safety principles. (A2.4) (TSA 19)
- SLO 9.1.1.5: Recognize and control hazards. (A2.6)
- SLO 9.1.1.6: Identify the hazards in confined spaces and the preparation needed to work in a confined space. (A2.7) (TSA 20)
- SLO 9.1.1.7: Identify First Aid/CPR. (A2.8)
- SLO 9.1.1.8: Explain the Workplace Hazardous Material Information System (WHMIS) and identify the WHMIS safety requirements. (A2.9) (TSA 13)
- SLO 9.1.1.9: Identify and control hazards. (A2.10)
- SLO 9.1.1.10: Identify safety precautions related to gas metal arc welding. (C2.2)
- SLO 9.1.1.11: Identify and describe safety considerations and procedures related to fasteners and adhesives. (D2.1)
- SLO 9.1.1.12: Practise safety precautions related to batteries. (B2.8)
- SLO 9.1.1.13: Identify safety considerations when working with body fillers and abrasives. (F2.4)
- SLO 9.1.1.14: Create and maintain a safe and organized working environment.

SLO 9.1.1.15: Follow guidelines listed in the Safe Work Procedure for specific tasks.

GLO 1.2: Demonstrate knowledge of the *Trade Safety Awareness Manual*.

No applicable SLOs.

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

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

SLO 9.2.1.1: Identify, describe, and demonstrate care and maintenance procedures related to tools and equipment. (A4.10, A4.17)

GLO 2.2: Use **tools and equipment**.

SLO 9.2.2.1: Identify types of hand tools, and demonstrate their applications and procedures for use. (A4.1, A4.11)

SLO 9.2.2.2: Identify types of basic measuring equipment, and demonstrate their applications and procedures for use. (A4.2, A4.12)

SLO 9.2.2.3: Identify and describe gas metal arc welding equipment and accessories. (C2.3)

Goal 3: Demonstrate vehicle **damage analysis** and **repair estimation**.

GLO 3.1: Demonstrate vehicle **damage analysis**.

No applicable SLOs.

GLO 3.2: Demonstrate vehicle **repair estimation**.

No applicable SLOs.

Goal 4: Demonstrate **welding** procedures.**GLO 4.1:** Demonstrate **welding** procedures.

- SLO 9.4.1.1: Prepare surfaces for welding.
- SLO 9.4.1.2: Define and describe GMAW (gas metal arc welding), related terminology, and its applications. (C2.1)
- SLO 9.4.1.3: Identify the types of welds performed using GMAW equipment. (C2.4)
- SLO 9.4.1.4: Describe the procedures used to gas metal arc weld various substrates. (C2.5)
- SLO 9.4.1.5: Identify weld defects, their causes, and the procedures to prevent and correct them. (C2.6)
- SLO 9.4.1.6: Operate, troubleshoot, and maintain GMAW equipment. (C2.7)
- SLO 9.4.1.7: Describe and perform various types of welds (lap, butt, flat, plug, recessed, tack, stitch, and continuous) in various positions (overhead, horizontal, and vertical). (C2.8)

Goal 5: Demonstrate **structural repair**.**GLO 5.1:** Demonstrate an understanding of **vehicle construction**.

No applicable SLOs.

GLO 5.2: Demonstrate **measuring and gauging**.

No applicable SLOs.

GLO 5.3: Perform **structural repairs**.

- SLO 9.5.3.1: Identify the importance of restoring vehicles to manufacturer's specifications.

Goal 6: Demonstrate **sheet metal repair**.**GLO 6.1:** Demonstrate an understanding of the **properties** of metal.

- SLO 9.6.1.1: Identify the types of automotive sheet metal. (F1.1).

GLO 6.2: **Repair sheet metal**.

No applicable SLOs.

Goal 7: Select, use, and manage **seam sealers, fillers, and adhesives.**

GLO 7.1: Select, use, and manage **seam sealers** and **adhesives.**

No applicable SLOs.

GLO 7.2: Select, use, and manage **fillers.**

- SLO 9.7.2.1: Identify the types of body fillers, and describe their characteristics and applications. (F2.3)
 - SLO 9.7.2.2: Describe the techniques and procedures used to apply body fillers. (F2.5)
 - SLO 9.7.2.3: Describe the procedures and techniques for shaping and finishing body fillers. (F2.6)
 - SLO 9.7.2.4: Demonstrate proper surface preparations for application of body fillers. (F2.7)
 - SLO 9.7.2.5: Demonstrate mixing and applying fillers. (F2.8)
 - SLO 9.7.2.6: Demonstrate procedures and methods for detecting high and low spots. (F2.9)
 - SLO 9.7.2.7: Demonstrate the procedures and techniques for shaping and finishing fillers. (F2.10)
 - SLO 9.7.2.8: Perform procedures used to detect surface irregularities. (F2.11)
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Goal 8: Select, use, and manage **fasteners.**

GLO 8.1: Select, use, and manage **fasteners.**

No applicable SLOs.

Goal 9: Demonstrate **glass repair and replacement.**

GLO 9.1: Demonstrate **glass repair and replacement.**

No applicable SLOs.

Goal 10: Demonstrate repair and replacement of **upholstery, trim, and hardware**.

GLO 10.1: Repair and replace **upholstery**.

No applicable SLOs.

GLO 10.2: Repair and replace **trim and hardware**.

No applicable SLOs.

Goal 11: Demonstrate **surface preparation**.

GLO 11.1: Select, use, and manage **materials other than abrasives** used in surface preparation.

SLO 9.11.1.1: Identify products used to clean surfaces, their applications, and the procedures for use. (H1.2).

GLO 11.2: Select, use, and manage **abrasives** used in surface preparation.

SLO 9.11.2.1: Identify the types of abrasives, and describe their characteristics and applications. (F2.1)

SLO 9.11.2.2: Describe the procedures and techniques for using abrasives. (F2.2)

GLO 11.3: Prepare substrates.

SLO 9.11.3.1: Describe ideal working conditions for surface preparation. (H1.1)

Goal 12: Demonstrate **refinishing**.

GLO 12.1: Demonstrate **refinishing** processes.

No applicable SLOs.

Goal 13: Demonstrate **cleaning and detailing**.

GLO 13.1: Demonstrate **cleaning and detailing**.

SLO 9.13.1.1: Clean vehicles in order to prepare them for repair and refinishing.

Goal 14: Describe **vehicle systems**.

GLO 14.1: Describe **vehicle systems**.

No applicable SLOs.

Goal 15: Describe and demonstrate transferable **cross-curricular** knowledge and skills.

GLO 15.1: Read, interpret, and communicate information.

No applicable SLOs.

GLO 15.2: Apply knowledge and skills from **mathematics**.

SLO 9.15.2.1: Demonstrate proficiency in the use of measurement tools such as tape measures and rulers.

GLO 15.3: Apply knowledge and skills from **information and communication technology**.

No applicable SLOs.

GLO 15.4: Apply knowledge and skills from the **sciences**.

No applicable SLOs.

Goal 16: Understand **career opportunities** and the **working environment**.

GLO 16.1: Describe **education, career opportunities, professional organizations, and working environments** related to collision repair and refinishing technology and associated fields.

SLO 9.16.1.1: Describe the structure and scope of the trade. (A1.1)

SLO 9.16.1.2: Describe the Manitoba apprenticeship program. (A1.2)

Goal 17: Demonstrate an awareness of **sustainability**.

GLO 17.1: Describe the effects of collision repair and refinishing technology on **human health and well-being**, including on tradespersons working in the field and those who use their services.

SLO 9.17.1.1: Demonstrate the use of dust collection systems.

GLO 17.2: Describe collision repair and refinishing technology's **sustainability practices** and **impact on the environment**.

No applicable SLOs.

Goal 18: Demonstrate an awareness of **ethical and legal standards** as they pertain to collision repair and refinishing technology.

GLO 18.1: Practise **ethical and legal standards** as they pertain to collision repair and refinishing technology.

No applicable SLOs.

Goal 19: Demonstrate **employability skills**.

GLO 19.1: Demonstrate fundamental **employability skills**.

SLO 9.19.1.1: Demonstrate regular and punctual attendance.

SLO 9.19.1.2: Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.

SLO 9.19.1.3: Demonstrate accountability by taking responsibility for own actions.

SLO 9.19.1.4: Demonstrate adaptability, initiative, and effort.

SLO 9.19.1.5: Demonstrate teamwork skills.

SLO 9.19.1.6: Demonstrate the ability to stay on task and effectively use time in class and work environments.

SLO 9.19.1.7: Demonstrate the responsible use of wireless communication devices.

GLO 19.2: Demonstrate an awareness of **cultural proficiency** and its importance in the workplace.

No applicable SLOs.

GLO 19.3: Demonstrate an understanding of the **business operation** of a collision repair and refinishing technology facility.

No applicable SLOs.

GLO 19.4: Demonstrate **critical thinking skills** in planning, procedures, analysis, and diagnosis.

No applicable SLOs.

Goal 20: Demonstrate an understanding of the **evolution** of collision repair and refinishing technology, including its **technological progression and emerging trends**.

GLO 20.1: Describe the **evolution** of collision repair and refinishing technology, including its **technological progression and emerging trends**.

No applicable SLOs.
