Manitoba Grade 9 Automotive Technology Introduction to Automotive Technology (Course Code 8695) Course Outline

Course Description

This optional course introduces students to automotive technology through supervised classroom and shop activities. Students develop safe work habits, identify and use tools and materials, practise trade mathematics and communication, and explore engine systems, tires, and wheels. The course supports automotive career exploration and may be delivered for 0.5 or 1.0 credit.

Course Objectives

- Identify shop hazards and demonstrate safe work practices.
- Select and correctly use personal protective equipment.
- Use automotive hand, power, and measuring tools safely.
- Measure and communicate dimensions in metric and imperial units.
- Identify and handle automotive materials and consumables.
- Identify engine components and explain basic mechanical operation.
- Perform introductory engine tasks with teacher guidance.
- Inspect and service tires and wheels with teacher guidance.
- Communicate respectfully and explore automotive careers.
- Discuss sustainability and responsible resource use.

Course Units

Suggested time allocations below show half-credit / full-credit hours (50 / 100 hours total). Adjust practice depth and project scope to the school timetable while retaining safety instruction and coverage of the listed strands.

Unit 1: Shop Safety and Injury Prevention

Estimated Time: 10 / 16 hours

Topics:

- Workers' rights and responsibilities
- PPE selection, fit, and limitations
- WHMIS labels, safety data sheets, and chemical hazards
- SAFE hazard assessment and safe work procedures
- Electrical isolation, fire prevention, and emergency equipment
- Injury reporting, mental health, and respectful workplaces

Assessment: Safety quiz; hazard identification activity; safety demonstrations

Unit 2: Careers and Workplace Communication

Estimated Time: 4 / 8 hours

Topics:

- Automotive career paths and changing technology
- Job skills and social competencies
- Respect, inclusion, and prevention of bullying
- Active listening, feedback, and clear instructions
- Professional use of communication devices

Assessment: Career exploration assignment; communication scenarios

Unit 3: Tools and Shop Equipment

Estimated Time: 8 / 16 hours

Topics:

- Hand tools and portable power tools
- Stationary tools and facility equipment
- Hoisting and lifting equipment and related specifications
- Tool selection, limitations, inspection, and storage
- Teacher-supervised tool and equipment demonstrations

Assessment: Tool identification quiz; practical skills checks

Unit 4: Measurement and Trade Mathematics

Estimated Time: 5 / 10 hours

Topics:

- Whole numbers and signed-number calculations
- Proper, improper, and mixed fractions
- Metric and imperial measurement
- Micrometers and vernier calipers
- Recording dimensions, tolerances, and torque specifications

Assessment: Measurement stations; calculation assignment

Unit 5: Materials and Environmental Responsibility

Estimated Time: 5 / 10 hours

Topics:

- Selecting and storing fluids, lubricants, fasteners, and seals
- Manufacturer specifications and material compatibility
- Safe handling, spill prevention, and waste disposal
- Indigenous perspectives on sustainability and respect for resources
- Environmental effects of material selection and disposal

Assessment: Materials identification activity; sustainability reflection

Unit 6: Introduction to Engines and Mechanical Systems

Estimated Time: 8 / 18 hours

Topics:

- Engine terminology and component identification
- Mechanical parts and their interaction within systems
- Engine hazards and safe tool selection
- Demonstrating component operation on training equipment
- Guided introductory engine repair procedures

Assessment: Component identification; supervised engine task

Unit 7: Tires and Wheels

Estimated Time: 7 / 16 hours

Topics:

- Tire types, construction, and seasonal applications
- Tread, sidewall, bead, belts, and plies
- Wheel construction, sizing, offset, and backspacing
- Tire and wheel inspection and equipment safety
- Supervised tire repair, replacement, and wheel service

Assessment: Identification quiz; supervised tire and wheel skills checks

Unit 8: Introductory Automotive Skills Project

Estimated Time: 3 / 6 hours

Topics:

- Planning a teacher-approved introductory service task
- Selecting tools, PPE, and materials
- Recording measurements and work completed
- Checking the result and returning tools
- Reflecting on safety, communication, and career interests

Assessment: Skills project; short written or oral reflection

Assessment Breakdown

The weighting follows the supplied course-outline template; project tasks are adapted to this course.

Component	Weight
Theory Tests & Quizzes	25%
Practical Shop Skills	35%
Labs & Assignments	20%
Culminating Project	10%
Employability & Safety Practices	10%

Required Tools and Equipment

- Automotive hand tools and torque wrench
- Approved portable and stationary shop equipment
- Metric and imperial rulers, calipers, and micrometers
- Teacher-approved hoisting and lifting equipment
- Engine trainers or demonstration components
- Tire and wheel equipment, pressure gauge, and tread-depth gauge
- PPE, safety data sheets, and service information

Employability Skills

- Workplace safety and responsible decision-making
- Problem-solving, critical thinking, and creativity
- Clear communication, active listening, and teamwork
- Time management, organization, and independent learning
- Professional conduct, inclusion, and respect for others
- Environmental responsibility and global citizenship
- Career awareness within the automotive service industry

Culminating Project

Students will complete a teacher-approved introductory automotive service task on a vehicle or trainer. They will identify hazards, select tools and materials, record relevant

measurements, complete the task under supervision, and explain how they checked their work. A short reflection will connect their experience to automotive careers and responsible resource use.

Recommended Prerequisite

None recommended. This is an introductory exploration course.

Curriculum Reference

Based on Manitoba's Grade 9 Introduction to Automotive Technology curriculum (Course Code 8695; supplied auto_gr9_eng.pdf).

Curriculum alignment: Strands A–F, H, and M: trade safety, careers, communications, mathematics, tools, materials, engine fundamentals, and tires and wheels.