



## 2024 Edmonton Regional Skills Canada Competition

### Contest Description (Scope Document)

NAIT, Main Campus (11762 106 St, Edmonton)

April 6, 2024

<b>EVENT:</b> Automobile Technology		<b>LEVEL:</b> Secondary																																
<b>DURATION OF CONTEST: 6 HOURS</b>		<b>LOCATION:</b> NAIT Main Campus, A109 & A111																																
<b>COMPETITION SCHEDULE:</b> <table><tr><td>REGISTRATION</td><td>7:30 am (Mandatory)</td></tr><tr><td>Orientation</td><td>7:45 am – 8:00am</td></tr><tr><td>Competition #1</td><td>8:05am – 8:45am</td></tr><tr><td>Break</td><td>8:45am – 9:00am</td></tr><tr><td>Competition #2</td><td>9:05am – 9:45am</td></tr><tr><td>Break</td><td>9:45am – 10:00am</td></tr><tr><td>Competition #3</td><td>10:05am – 10:45am</td></tr><tr><td>Break</td><td>10:45am – 11:00am</td></tr><tr><td>Competition #4</td><td>11:05 am – 11:45am</td></tr><tr><td>Lunch</td><td>11:45am – 12:45pm</td></tr><tr><td>Competition #5</td><td>12:45pm – 1:25pm</td></tr><tr><td>Break</td><td>1:25pm – 1:40pm</td></tr><tr><td>Competition #6</td><td>1:40pm – 2:20pm</td></tr><tr><td>Break</td><td>2:20pm – 2:35pm</td></tr><tr><td>Competition #7</td><td>2:35pm – 3:15pm</td></tr><tr><td colspan="2">*Times are subject to change.</td></tr></table>		REGISTRATION	7:30 am (Mandatory)	Orientation	7:45 am – 8:00am	Competition #1	8:05am – 8:45am	Break	8:45am – 9:00am	Competition #2	9:05am – 9:45am	Break	9:45am – 10:00am	Competition #3	10:05am – 10:45am	Break	10:45am – 11:00am	Competition #4	11:05 am – 11:45am	Lunch	11:45am – 12:45pm	Competition #5	12:45pm – 1:25pm	Break	1:25pm – 1:40pm	Competition #6	1:40pm – 2:20pm	Break	2:20pm – 2:35pm	Competition #7	2:35pm – 3:15pm	*Times are subject to change.		<b>REGIONALIZED: YES</b> <b>If YES, To compete at the Provincial Skills Canada Competition students must qualify at their Regional Skills Canada Competition.</b>
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<b>AWARDS CEREMONY INFORMATION:</b> Awards Ceremony to follow at the NAIT Main Campus. Location to be confirmed at competitor registration on the day of the event.																																		

## **CONTEST INTRODUCTION**

To identify and evaluate a competitor's knowledge of the Automobile Technology trade. The competitor will display his or her understanding of specific areas of the automobile and demonstrate their skills for maintaining and repairing components related to those areas.

## **SKILLS AND KNOWLEDGE TO BE TESTED**

Practical demonstrations – 100%

## **PROJECT DESCRIPTION**

The competitor is required to complete seven competition areas. The areas are as follows:

### **1.- Measuring Tools and Fastener Exercise**

Competitors may be required to:

- Use of imperial and metric measuring tools (including micrometers, dial calipers, dial indicators, telescopic gauges, small hole gauges, feeler gauges.)
- Calculate dimensions based on the measurements taken from supplied project jig.
- Identify and classify fasteners that are provided.
- Using supplied information (directions, tap drill charts and torque chart) perform correct drilling, correct tapping and installation of fasteners to project piece.
- Correctly set and use a torque wrench.

### **2. - Brakes and Stability Control Systems**

Competitors may be required to:

- Dis-assemble and assemble disc and drum brake assemblies.
- Measure minimum rotor thickness, maximum rotor thickness variation, and rotor run-out.
- Measure brake drum diameter and brake drum out of round.
- Properly adjust brake shoe to drum clearance.
- Flare and bend brake tubing.

### **3. - Suspension and Steering Systems**

Competitors may be required to:

- Identify the type of suspension and steering systems used in a vehicle.
- Interpret alignment angles in relation to manufacturer's specification and vehicle handling
- Dismount and mount a tire on a rim.
- Balance a tire and rim assembly.

### **4. - Driveline**

Competitors may be required to:

- Remove and install universal joints in a driveshaft
- Measure differential pinion bearing preload.
- Measure backlash in a differential assembly.
- Identify whether a gear tooth pattern is acceptable.
- Identify paths of power in a manual transmission.
- Calculate gear ratios in a manual transmission.
- Identify components in a manual transmission.

## **5. - Body Electrical**

Competitors may be required to:

- Perform electrical measurements on a vehicle electrical circuit to verify operation. The measurements will be done with a DVOM and/or a test light.
- Assemble basic electrical systems on a circuit board.

## **6. - Engine Mechanical**

Competitors may be required to:

- Remove and install components on an engine.
- Measure engine components for flatness, out of round, taper, diameter, endplay, clearance and lift. The competitor may be required to use dial indicators, straight edges, feeler gauges, micrometers, telescopic gauges, plastigage or calipers.
- Perform a cylinder leak down test.
- Properly install a timing chain/belt on an engine.

## **7. - Drivability**

Competitors may be required to:

- Use a scan tool to identify DTC's in the engine management system. Follow the manufacturer's diagnostic procedures to identify the cause of the DTC and the repair required to remedy the condition. This may require the competitor to use a DVOM and/or a test light to verify electrical circuits for voltage, amperage and resistance as well as identifying opens, shorts to ground, shorts to voltage and excessive resistance.
- Use a scan tool to activate engine management outputs.

## **EQUIPMENT & MATERIALS**

### **Equipment and Materials Competitors Must Supply:**

CSA Approved Safety Glasses	HB Pencil
CSA Approved Footwear	Eraser
Shop Coat or Coveralls	

### **Equipment and Materials Supplied by the Committee:**

Hand tools	Calculators
Material	
Electrical Test Equipment Required to Perform the Tasks	

## **JUDGING CRITERIA**

The competitor will be explained the judging criteria for each competition at the start of the competition. All seven components are equally weighted and the total is comprised of an average of all components combined.

## **TIE BREAKING PROCESS**

In the event of a tie, a 25 question theory exam will be administered to break the tie.

## **RELATED CAREER AND TECHNOLOGY STUDIES COURSES**

Descriptions of all modules are located at the following website:

[https://education.alberta.ca/media/160539/mec\\_sum.pdf](https://education.alberta.ca/media/160539/mec_sum.pdf)



Please reference the “Automobile Technology Event Preparation Manual” to further detail the module requirements, which can be found with the scope document on the Skills Canada Alberta website.

MEC 1040: Engine Fundamentals	MEC 2150: Suspension Systems
MEC 1090: Electrical Fundamentals	MEC 2160: Steering Systems
MEC 2030: Lubrication & Cooling	MEC 3030: Engine Diagnosis
MEC 2040: Fuel & Exhaust Systems	MEC 3040: Engine Tune Up
MEC 2060: Ignition Systems	MEC 3060: Engine Reconditioning – Head
MEC 2070: Emission Controls	MEC 3070: Engine Reconditioning – Block
MEC 2090: Electrical Components	MEC 3090: Computer Systems
MEC 2110: Braking Systems	MEC 3130: Automatic Transmissions
MEC 2130: Drive Line	MEC 3150: Wheel Alignment
MEC 2140: Transmissions/Transaxles	

#### CLOTHING REQUIREMENT

It is important that competitors present a professional image and appearance. Appropriate work clothing must be worn to compete. All clothing must be neat and clean and free of rips and tears. Casual wear such as shorts will not be permitted. No loose fitting clothes or jewelry.

#### SAFETY

The health, safety and welfare of all individuals involved with Skills Canada Alberta are of vital importance. Safety is a condition of participation with Skills Canada Alberta and shall not be sacrificed for the sake of expediency. At the discretion of the judges and technical committees, any competitor can be denied the right to participate should they not have the required proper safety equipment and/or act in an unsafe manner that can cause harm to themselves or others.

#### ADDITIONAL INFORMATION

Lunch will be provided for all competitors. Unfortunately, all allergies may not be able to be accommodated for. Please connect with the local Regional Coordinator for more information.

Parking information & venue maps: <INFO>

Regulations & Policies: A copy of the Skills Canada Alberta Regional Regulations & Policies can be found at the following link: <http://www.skillsalberta.com/policies-and-procedures>

#### COMMITTEE MEMBERS

Russ Belik			