



CONTEST DESCRIPTION

Aerospace Technology

POST-SECONDARY

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1 THE SKILLS FOR SUCCESS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

The Government of Canada has updated the previous Essential Skills framework to the new Skills for Success model in response to the evolving labour market and changing skill requirements. This model outlines nine fundamental skills Canadians need to thrive in work, education, training, and daily life.

Skills/Compétences Canada aims to highlight the importance of these skills, vital for success in trade and technology careers. Competitors can see how Skills for Success are integrated into contest descriptions, projects, and project documents. Recognizing these skills during the competition helps competitors match tasks with specific skills necessary for success and understand how these skills apply within their trade or technology programs and future careers.

The nine key Skills for Success, validated for workplace success, are:

1. Numeracy
2. Communication
3. Collaboration
4. Adaptability
5. Reading
6. Writing
7. Problem Solving
8. Creativity and Innovation
9. Digital

These Skills for Success are detailed in sections 2.4 and/or 3.2 (to be completed by SCC) of your Contest Description and, if relevant, in your Project and supporting documents.

2 CONTEST INTRODUCTION

2.1 Description of the associated work role(s) or occupation(s)

https://www.skillscompetencescanada.com/en/skill_area/aerospace-technology/

2.2 Purpose of the Challenge

To assess the contestants' skills and knowledge in performing tasks in the aerospace industry. Challenges reflect the skill level of a graduate student from any Canadian Aircraft Maintenance Engineer Category M Program. There is no requirement that competitors have previously completed an AME M Program.

2.3 Duration of contest

10 hours

2.4 Skills and Knowledge to be tested

- Read and interpret technical instructions and drawings⁵
- Read and interpret standard practices (documents provided)⁵
- Read and interpret system descriptions⁵
- Time management¹
- Tool selection
- Tool usage
- Task planning (time, materials, workplace resources, layout)
 - Fabrication layouts calculation (Flat Pattern Layouts)¹
 - 2-part adhesive mix ratio calculation¹
 - Defective system troubleshooting⁷Defect reporting⁶
 - Corrective action determination⁷
 - Post-maintenance check determination⁷
 - Workspace collaboration (shared resources)³
- Industry standards (AC43.13 or supplied instructions) application
 - Workplace safety

Skills for Success - ¹Numeracy, ³Collaboration, ⁵Reading, ⁶Writing, ⁷Problem Solving

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents on the Skills/Compétences Canada website.

DOCUMENT	DATE OF DISTRIBUTION
<p>Reference materials required by the selected projects will be provided in English only. Download links to each document will be provided on the SCC Website.</p> <p>The reference materials include manufacturer's maintenance manuals, standard practice documents (example: AC43.13), equipment instruction manuals, etc.</p> <p>Additional materials (manuals) may be provided to allow for planning flexibility (Potential changes with projects). For example, two engine manuals may be provided for an engine project.</p> <p>These materials are provided to allow familiarization by English and French speaking competitors.</p>	<p>No later than 30 days prior to competition.</p>

In accordance with industry practices, competitors will only be permitted these materials in English. No language translations will be supplied or permitted for these materials.	
Additional materials as deemed necessary by the NTC.	No later than 30 days prior to competition.
In rare cases, projects may change based on availability of training aids. Changes in reference materials will be provided as soon as practical to all competitors.	For changes within the 30-day prior to the competition, as soon as possible to all potential competitors. Individual competitor receipt confirmations will be obtained.

3.2 Tasks that may be performed during the contest.

- Each project will be one to three hours in length. Duration variations are required to accommodate scheduling and project complexity.
- Five projects will be selected from the following list based on availability of equipment. In some cases, project elements may be combined. For example, an Electrical Troubleshooting project may include a sub-task to repair the system to a serviceable condition.
- Competitors will be notified of project selection during competition orientation. Examples are provided for reference purposes only and may not be reflective of actual tasks.
- The term “Electrical Wiring Interconnection System” or “EWIS” refers to any wire, wiring device, or combination of these, including termination devices, installed in any area of the aeroplane for the purpose of transmitting electrical energy, including data and signals, between two or more intended termination points (CARS 525 Subchapter H).
- Projects may require completion of a work card or other certification (Form 1, serviceability tag, etc.). An example has been provided in Appendix A.

Field Repair (Metal Structure) (2-3 hours)

- Read and interpret technical documents^{5,7}
- Determine repair requirements in accordance with standard practices (AC43.13) and/or supplied engineering information^{5,7}
- Prepare a damage report to obtain a manufacturer approved repair scheme
- Fabricate repair parts^{1,7}
- Install repair parts⁷

- Complete a serviceability check⁷

Example: Punctured skins, cracked rib

Sheet Metal Fabrication (2-3 hours)

- Read and interpret technical documents^{5,7}
- Prepare a project layout plan (Bend Radius, Bend Allowance, Set Back, Fastener Layout etc.)^{1,6,7}
- Fabricate sheet metal parts based on supplied documentation and standard practices (AC43.13)^{1,5,7}
- Assemble fabricated parts into an assembly (Riveting, bolting, screwing)^{1,7}
- Work with a fellow competitor to share available equipment (Bending Brake, Shear)^{2,3}

Example: Corner Section, Hat Channel, Z-Brackets, Antenna Mount.

System Troubleshooting (Electro-Mechanical) (2 hours)

- Read and interpret technical documents^{5,7}
- Determine and communicate repair and/or modification requirements based on reported or identified defect(s)^{2,7}
- Perform the required repair and/or modification as applicable⁷
- Perform functional tests as appropriate⁷
- Demonstrate an understanding of correct system function.^{2,5,7}
- If required, work alongside another competitor completing a different project on the same training aid^{2,3}

Example: Aircraft Flap System, Aircraft Heater System

Electrical/ LRU System Troubleshooting (1-2 hours)

- Read and interpret technical documents^{5,7}
- Determine maintenance task(s) required based on reported or identified defects.
- Perform required troubleshooting on an aircraft or simulated system^{4,5,7}
- Perform the required repair and/or modification as applicable^{1,4,7}
- Perform or communicate serviceability checks as appropriate^{2,7}
- Complete documents and reports as required^{2,6}

Example: Aircraft lighting, Landing gear indication, Power distribution circuit

Electrical Field Repair (EWIS) (2-3 hours)

- Read and interpret technical documents^{5,7}
- Determine repair requirements in accordance with standard practices (AC43.13) and/or supplied engineering information^{5,7}
- Fabricate repair parts^{1,7}
- Install repair parts⁷
- Complete a serviceability check⁷

Example: Cut wiring, incorrect assembly, chaffed insulation, high resistance connections.

Composite Inspection (2 hours)

- Read and interpret technical documents^{5,7}
- Inspect damaged part utilizing visual and tap-hammer testing.⁷
- Prepare a report detailing inspection findings.^{2,6,7}
- Determine appropriate repair in accordance with standard practices and/ or supplied engineering documentation^{5,7}

Example: Main rotor blade delamination, composite panel delamination.

Composite Repair (Simulated) (2 hours)

- Read and interpret technical documents^{5,7}
- Complete a composite repair in accordance with provided instructions.^{1,5,7}

Example: Wet-layup (with vacuum bagging), insert replacement/installation.

Note: A repair may encompass a complete repair or specific repair steps/tasks. “Simulated” refers to the use of materials which allows for the project to follow health and safety requirements in a competition environment (equipment, spectator, etc). Detailed information will be provided with project. (Example: Use of white glue in place of 2 part-adhesive).

Component Inspection and Maintenance (1-2 hours)

- Read and interpret technical documents^{5,7}
- Determine maintenance task(s) required based on reported or identified defects.
- Perform requested maintenance tasks (selected based on stated competitor skill level, aircraft type, tooling, and safety equipment available)⁷
- Complete a defect report detailing finding if required^{2,6}
- Perform or communicate serviceability checks as appropriate^{2,7}

Example: Rotor head, swashplate assembly, landing gear strut, wheel.

Aircraft Inspection and Maintenance (1-2 hours) (On-Aircraft)

- Read and interpret technical documents^{5,7}
- Determine maintenance task(s) required based on reported or identified defects.
- Perform requested maintenance tasks (selected based on stated competitor skill level, aircraft type, tooling, and safety equipment available)⁷
- Complete a defect report detailing finding if required^{2,6}
- Perform or communicate serviceability checks as appropriate^{2,7}

Example: 100-hour Inspection Tasks, Daily Inspection Tasks, Hard Landing, Rotor Strike.

Reciprocating Engine Inspection and Maintenance (2 hours)

- Read and interpret technical documents^{5,7}
- Determine maintenance task(s) required based on reported or identified defects.
- Perform required maintenance activities⁷
- Perform or communicate serviceability checks as appropriate^{2,7}

Example: Magneto Timing, Driveshaft Runout Check, Cylinder/Piston Inspection.

Gas Turbine Engine Inspection and Maintenance (2 hours)

- Read and interpret technical documents^{5,7}
- Determine maintenance task(s) required based on reported or identified defects.
- Perform required maintenance activities⁷
- Perform or communicate serviceability checks as appropriate^{2,7}

Example: Fuel Nozzle Inspection, Simplified/Basic Borescope Inspection, Filter Replacement.

Skills for Success - ¹Numeracy, ²Communication, ³Collaboration, ⁴Adaptability, ⁵Reading, ⁶Writing, ⁷Problem Solving

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada

- All tooling, specialty tooling and equipment required by the selected project.
- Reference documentation

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

4.2 Equipment and materials provided by the competitor.

- Calculator (Simple, non-graphing, non-programmable, no phones)
- The following are optional and may be supplied by the competitor:
 - Headlamp
 - Pen (Blue/Black)
 - Fine Tip Marker (Black)

4.3 Toolboxes Guidelines

- Toolboxes and tools are not required to be supplied by the competitor.

4.4 Required clothing provided by the competitor.

- CSA approved footwear.
- Appropriate workplace clothing (coveralls, work pants, etc.)

5 HEALTH AND SAFETY

5.1 Safety program

SCC has implemented a comprehensive safety program as health and safety is an integral part of our competitions. Our safety program includes guidelines and procedures to make the work environment in each skill area safer.

5.1.1 Safety manual

As part of our program a safety manual has been created to monitor and document health and safety within each skill area. It includes a definite plan of action designed to prevent accidents. The safety manual will be provided for every skill and these instructions must be followed and respected by all participants and officials at the SCNC.

5.1.2 Safety workshop

During orientation, Competitors will participate in a Safety workshop, and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety, and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

5.2 List of required personal protective equipment (PPE) provided by Skills/Compétences Canada

- Hearing Protection (foam ear plugs)
- Safety Glasses (Including over-the-glasses type)
- Nitrile Gloves

5.3 List of required personal protective equipment (PPE) provided by the competitor.

- CSA Approved Safety Footwear.
- Work Gloves (Leather, or similar)
- Competitors may bring their own PPE provided it meets or exceeds CSA standards
 - Prescription safety eyewear (CSA approved, full wrap-around type)
 - Headset-type ear protection
 - Molded ear plugs
- Use of any alternate equipment will be at the discretion of the NTC Chair.

Note: Competitors who do not have the required protective equipment will not be allowed to participate in the competition.

6 ASSESSMENT

6.1 Point breakdown.

TASKS	/100
Project A	20
Project B	20
Project C	20
Project D	20
Project E	20

A basic evaluation matrix will be provided with each competitor project document.

7 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during the competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Project Selection	Competitors will be notified of the five projects selected during competition orientation. Prior communication of the selected projects to the competitors is prohibited.
Free Periods & Breaks	During free periods and between projects, competitors are encouraged to explore other contests. As a courtesy to fellow competitors, please refrain from watching other Aerospace Technology projects still in progress.
Music/Audio	No audio playback devices, headphones or ear buds are allowed due to safety and communication concerns.

Drawings, recording information	Competitors are not allowed to bring any prepared drawings or documented information to the Competition. Video and/or audio recording is prohibited.
Templates, aids, etc.	Competitors are not allowed to bring templates and aids to the Competition that may give them an unfair advantage.
Use of technology – personal laptops, tablets and mobile phones	Competitors are not allowed to bring personal laptops, tablets, mobile phones and smart watches into the workshop. Exception: Mobile phones remain on silent mode in a personal bag and are only accessed when outside the workshop area.
Hats (ball caps, toques, beanies, etc.)	Hats (ball caps, toques, beanies, etc.) will not be permitted during competition. Cultural and religious headwear is permitted.

8 ADDITIONAL INFORMATION

8.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service may not be guaranteed.

8.2 Ties

- Tie Breaker #1: The competitor with the higher score on their individual worst scoring project.
 - Example:
 - Competitor #1 Worst Scoring Project – Sheet Metal Repair = 14/20
 - Competitor #2 Worst Scoring Project – Aircraft Inspection = 15/20
 Result: Competitor #2 Wins
- Tie Breaker #2: The competitor with the higher score on their individual second worst scoring project.
 - Example:
 - Competitor #1 Worst Scoring Project – Sheet Metal Repair = 14/20
 - Competitor #2 Worst Scoring Project – Aircraft Inspection = 15/20
 Result: Competitor #2 Wins
- Tie Breaker #3: The competitor with the higher score on their individual third lowest scoring project wins.

8.3 Competition rules

Refer to the competition rules of the Skills Canada National Competition which can be found on our website.

9 NATIONAL TECHNICAL COMMITTEE MEMBERS

MEMBER ORGANIZATION	NAME
Quebec	Gabriel Jacques – Chair
Ontario	Nathan From – Co-Chair
Manitoba	Mike Morawski
Saskatchewan	Blake Snell
Alberta	Ryan Gillis
British Columbia	Parm Rai
Newfoundland and Labrador	Dana Young
Nova Scotia	Sarah Getz

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve (nathaliem@skillscanada.com).