Contest Description
Mechanical Engineering CAD
Post-Secondary

DATE: April 4, 2025	LOCATION NSCC Ivany Campus, Room 3337
TIME	**TASK**
8:00am - 9:00am	Orientation
9:00am – 12:00pm	Reverse Engineering Competition - Task 1 (3 hours)
12:00pm – 1:00pm	Lunch
1:00pm – 4:00 pm	Design Competition - Task 2 (3 hours)
4:00 pm	Competition concludes & judging will begin.

1. Purpose of the Contest

The purpose of the contest is to evaluate each contestant's preparation for employment in the field of Engineering Design and Drafting using CAD and to recognize outstanding students for excellence & professionalism in their field.

2. Criteria

- Tasks that may be performed during the contest.
    - Sketching, analyzing measurements and part measuring.
    - Implement design changes by using problem solving, decision making and critical thinking skills.
    - Detail drawing from assembly and blueprint document interpretation.
    - Assembly from details.
    - Parametric Modeling – Family of parts and/or assemblies.
    - Export a variety of 3D model formats such as STL files with proper units and resolution for additive manufacturing, STEP files, .3mf files, 3D PDF.
    - Designing for additive manufacturing/3D Printing using Fused Deposition Modeling. (FDM)
    - Exporting drawings as multi-page 2D files.
    - Import a variety of 3D model formats such as STEP files.

3. Number of Stations / Allocations

There will be a limit of ten (10) competition workstations.

4. Skills & Knowledge to be Tested.

Competitors will be required to demonstrate their ability to:

- Prior to the competition, the competitor shall create appropriate drawing templates with title block containing the information shown in the examples that will be provided after competition registration.
- Use CAD software to produce drawings that comply with the ASME Y 14 Standards.
- Use CAD software to produce 3D parametric models of parts and assemblies from physical measurement, drawing files (PDF) and/or import reference model files.
- Use measuring instruments.
- Dimension and tolerance drawings to industry standards, including Geometric Dimensioning and Tolerancing (GD&T) as per ASME Y 14.5M-2018.
- Design components for additive manufacturing/3D printing using Fused Deposition Modeling (FDM)
- Generate export files for the purposes of 3D printing.
- Develop new product designs which will function properly within an assembly or on their own.

5. Prerequisites

To be eligible to compete all potential competitors must:

- Be enrolled in a community college, university, private school OR be a registered apprentice with the Department of Labour and Advanced Education (Apprenticeship Agency).
- Be registered as a competitor with Skills Canada – Nova Scotia.
- Not be a certified journeyperson.
- Possess Canadian citizenship or Permanent Resident (Landed Immigrant) status and be a resident of Nova Scotia. Competitors are responsible for

verifying this information if requested.

- Note: International students are eligible to compete in the Nova Scotia Skills Competition, however they are not eligible to advance to the Skills Canada National Competition. International competitors will be required to sign an additional release form of acknowledgement.

- Have been earning post-secondary credits in a sector relevant to the one in which they wish to compete, (i.e., to compete in Mechanical CAD, the student would be earning credits in any mechanical engineering-related program) at any time during the academic school year. (September to June)
- Be able to show either current proof of enrollment in a post-secondary institution upon request of the Provincial Technical Committee (PTC) or Skills Canada – Nova Scotia.
- Have completed and submitted a signed release form.

Prerequisite Work

- Competitors are required to complete prerequisite work before this competition. Competitors must create drawing templates for use during the competition. PDF example of the template will be provided to competitors after registration.

6. Equipment & Clothing

1.1.1. Equipment and materials provided by Skills Canada – Nova Scotia

- A workstation equipped with dual monitors, mouse, keyboard, 3D mouse with Autodesk Inventor 2024 preinstalled will be provided to competitor for the competition.

a) What Competitors Must Supply

- 6" measuring caliper. (slide, dial, digital)
- Paper, pens, and pencils.
- Competitors may bring textbooks, reference books, course handouts, course notes, software reference manuals, reference tables, and calculators.
  Note: All reference materials are subject to inspection and approval by the judges and cannot be shared between competitors.
- Appropriate attire suitable for a Provincial championship is required.

7. Evaluation & Judging Criteria

Contest Projects consist of work that will be marked according to the following:

Contest Tasks: 100%

Reverse Engineering Competition Task

- 25% - Measuring accuracy.
- 25% - Engineering drawing creation.

Design Competition Task

- 15% - Component design.
- 25% - Engineering drawing creation.
- 5% - Parametric element creation.
- 5% - Raytraced image and/or animation creation.

Please note: a detailed breakdown of the marking scheme will be given in:

1. SCNS25-5 Prerequisite Modeling Description.pdf
2. SCNS25-5 Parametric Modelling Project Description.pdf
3. SCNS25-5 Part Measurement Project Description.pdf

8. PTC Contact Information

Name	Employer	Email
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