2026 DSBN REGIONAL

MECHANICAL CAD

SKILLS CHALLENGE SECONDARY LEVEL SCOPE

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PURPOSE OF THE CONTEST:

- To evaluate each competitor's preparation for employment in the field of Mechanical Engineering Drafting and using CAD To recognize outstanding students for excellence and professionalism in their field Understand and use fundamental commands to produce scaled 2D CAD drawings and 3D parametric models
- Demonstrate knowledge of material designations based on their function within a mechanical assembly
- Select fasteners and other assembly components as required (pins, keys, snap rings, etc.) Use instruments to measure existing parts Sketch parts Using traditional techniques and GDT, dimension and tolerance drawings that comply with Canadian standards
- Extract information from a kinematic analysis Apply material types to models and determine mass information Apply animation to 3D parametric models to demonstrate motion Conduct an interview with a technically proficient representative to evaluate communication skills

EVENT DETAILS:
Date: Wednesday March 4, 2026
Time: 8:45 - 2:30 (lunch provided)
Location: Niagara College – Welland Campus

ENTRY: Please connect with a teacher advisor at your school to complete your registration for this competition to be eligible to participate.

Practical Work Practical tasks will be given by sketches, drawing and electronic data files, individual physical components, and assemblies. Collection of information from these sources will require the reading of prints, sketches, drawings, engineering tables, charts, and manuals. It may also require that the competitor measure physical objects using vernier and other common measuring instruments. Problems will require solutions in the form of graphical and textual descriptions, sufficient to communicate successfully the information necessary for the manufacturing of these components and assemblies in industry.

Drawing #1 (2 hours) will consist of: Print reading and re-creation

Drawing #2 (2 hours) will consist of: Part Measuring and 3d modeling

SKILLS AND KNOWLEDGE TO BE TESTED:

Assembly - Drawings

- Bill of Materials
- Ballooning
- Creation/Inserting of fasteners
- Detail Drawings
- Complete shape description of the component
  General dimensions
- 1st and 3rd angle projection
- Fundamental dimensions and tolerances
- Geometric dimensions and tolerances
  Surface finish symbols
- Heat treatment instruction
- Surface treatment instructions Kinematics
- Articulate the motion study of parts
- Determine how parts go together to fully describe an assembly in a mechanical assembly either by geometric construction or 3D animation Bonus Animation
- Create a simulated assembly using the .ipt file. **Do not compress the files.**

SAFETY REQUIREMENTS:

Competitors are required to follow all industry safety standards during the competition.

EQUIPMENT, MATERIALS, TOOLS, AND SUPPLIES:

Equipment Supplied by the Contest Coordinator:

Niagara College Windows Computer lab (22 seats)

- Autodesk Inventor 2024 or 2025
- Fusion 360

Equipment Supplied by the Competitor:

Calculator Sketch paper Pencils Measuring instruments to measure the supplied part, such as: Vernier, micrometers, protractor, ruler, combination set, etc. Engineering Drawing and software reference manuals/ textbooks 3D mouse.

CLOTHING REQUIREMENTS:

Casual business attire must be worn with DSBN Technology shirts.

PROJECT AND COMPETITION EXPECTATIONS:

Output:

- 2D detail drawing Scale to suit (1:2) Use correct nomenclature when dimensioning Save the drawing in the folder labeled with your given Competitor Number.

  *** At no time should your name be used on any part of the challenge.***

General:

1. You are to use your discretion in determining features that may not be clear to you

2. The coordinator WILL NOT answer any questions pertaining to the challenge

3. Software, calculators, measuring instruments and reference manuals are allowed

4. DO NOT exit the program or close drawing files. All drawings should be running and accessible from the taskbar at the bottom of the screen.

JUDGING CRITERIA:

- ❏ Task specific
  will include:
  - ❏ proper constraints,
  - ❏ proper dimensioning conventions
  - ❏ Parts Drawing (proper views, dimensions, title block)
  - ❏ Assembly drawing (BOM, balloons, dimensions)
  - ❏ Presentation Drawing (render/shaded view, exploded view,)

TEACHER'S ROLE:

Instructors are expected to acquaint their student participants with all of the enclosed guidelines. Teachers may accompany their students or visit any time during the competition but may not assist the competitors during the challenge.

**** Each competitor will be given a number by their coordinator upon registration at the location and will be judged anonymously during the competition.**