Provincial Scope Document (multi-year)

MECHANICAL CAD (Secondary)

Contest length: 3.5 hours + 30 minutes introduction.

Contest start: 8:30am ***Check-in time: 8:00am***

Purpose of the Challenge:

To evaluate students' knowledge and skill in one of 4 categories: Reverse Engineering, Assembly, Part Design, or Parametric Modeling.

Skills & Knowledge to be Tested:

Problem Solving:

- Students may be required to solve open ended problems and interpret misleading or erroneous data. Such decision making will obviously affect the completion of the project.

CAD Techniques:

- Use of fundamental CAD techniques to produce a 3D model(s), assembly & or drawing set to International Drafting Standards.
- Ability to produce a CAD drawing to a defined scale using Templates and/or Borders.
- Knowledge of CAD standards and proficiency of chosen software.
- Ability to import files for use during the competition.
- Ability to export drawing sets as a pdf.
- Ability to export 3D models as a variety of file types such as .stl or .step.

Mechanical Drafting Procedures:

- Knowledge and understanding of Mechanical Drafting Standards and Symbols (ISO/ANSI)
- Ability to create and appropriately layout the necessary views and/or sections, given a mechanical component or drawing.
- Accuracy and completeness of chosen views, linetypes, hatching and mechanical drafting conventions.
- Correct use of, and accuracy of, dimensioning on appropriate views.
- Presence of, and positioning of, required notations, symbols, annotations, and text.
- The ability to use CAD to generate information such as areas, volumes, angles etc.
- Ability to generate Auxiliary, Orthographic and other views.

Hardware / Software:

Hardware:

Competitors must bring their own computer, monitor (two recommended, three max), and peripherals (3d navigator allowed). Contestant should have administrative rights to the computer and are responsible for the functioning of their own equipment.

- Ensure your computer can adequately run your CAD software of choice, even with large assemblies.
- The project will be distributed and submitted over the USB Drive. Ensure that your computer has a functioning USB 2.0 A port
- If competitors are bringing a computer or laptop from their school (instead of their personal computer), please ensure that the computer is unlocked so documents and possibly software can be saved/installed to the hard drive and technology support can be provided onsite. This may require access to BIOS settings.

Software:

- Legally licensed 3D parametric CAD modeling software.

Tools To Bring To Competition

Necessary:

- ✓ Pencil(s)
- ✓ Metric and imperial scales (rulers)
- ✓ Vernier or Digital Caliper
- ✓ Notepad

Optional but helpful:

- ✓ Machinist Handbook (or suitable reference text)
- ✓ Blank paper (for sketching)
- ✓ Graph paper (for sketching)
- ✓ Calculator
- ✓ Small / large circle stencils
- ✓ Thread Pitch Gauges (Metric and Imperial)
- ✓ Radius Gauges
- ✓ Eraser

Items That Will Be Supplied At The Competition

- ✓ Competitor Package with competition explanation and information
- ✓ All items required to complete the competition (other than those listed above)

Technical Committee:

Michael Christensen	Technical Chair	mchristensen@5-0design.com
Chad Hipwell	Technical Chair	chad_hipwell@sd33.bc.ca

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