



DSBN REGIONAL **MECHANICAL CAD SKILLS CHALLENGE 2020** SECONDARY LEVEL SCOPE

CHAIR: Denny Dischke
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EVENT DETAILS:

Date: Wednesday, Feb. 26th, 2020

Time: 8:00 am arrival 8:30am opening

Location: Niagara College, Welland RM: Rankin TC03

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

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.

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Part #1 (3 hours) will consist of: Sketching and Part Measuring

Part #2 (3 hours) will consist of: Parametric Modeling and Assembly

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 .ipfile.
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:

IBM compatible personal computer, monitor and mouse. All supplied equipment will be identical for each contestant Software

- Windows XP Standard DSBN Image
- AutoCAD 2018
- Autodesk Inventor Pro Version 2018
- One (1) Assembled Model for each competitor.

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 Résumé 3D mouse (if desired – the competitor is responsible for the installation of the software and drivers and its proper functioning)

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 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:

| | |
|--|-------------------|
| <input type="checkbox"/> Mark allotment 2D drawing with dimensions | 40 points |
| <input type="checkbox"/> 3D model with constraints | 35 points |
| <input type="checkbox"/> Assembly | 10 points |
| <input type="checkbox"/> Exploded Assembly | 10 points |
| Total 95 points | |
| <input type="checkbox"/> Bonus - Animation | 10 Points |
| <input type="checkbox"/> Total of Total | 105 Points |

ENTRY: Students must register online at <http://teched.dsbm.org/skills> with all of the required information completed to be eligible to participate. Teachers should also forward a list of competitors participating from their school to the contest Chair at least 7 days prior to the date of the contest.

TRANSPORTATION:

Students are responsible for their own transportation.

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.

Special Instructions or Guidelines:

**Please remember to bring your
Resume!**

COMPETITION AGENDA:

| | |
|------------------------|---------------------------------|
| 8:00- 8:30 a.m. | Sign in/ Arrival/ Set up |
| 8:30 a.m | Orientation |
| 8:45-9:00 a.m | Competition begins |
| 11:15 a. m | ***** Lunch ***** |
| 11:40 | Competition resumes |
| 3:00 | Competition ends |
| 3:00 | Judging |

**** Competitors must be on time for their contest and may be disqualified if they do not sign-in at their contest site prior to the start of orientation. At the discretion of the technical committee chair, the competitor may be permitted to compete but would not receive any additional time. Each competitor will be given a number by their coordinator upon registration at the location and will be judged anonymously during the competition.**