



# 2018 21st ANNUAL SKILLS MANITOBA COMPETITION CONTEST DESCRIPTION

## 1. CONTEST DETAILS

**1.1. Contest Name:** Mechanical Engineering CAD

**1.2. Contest Number:** 05

**1.3. Level:** Secondary & Post-Secondary

**1.4. Contest Location:** Red River College – Notre Dame Campus – J214

### **NOTE:**

**Secondary level:** 2 competitors per school. Max secondary students 11

**Post-Secondary level:** 3 competitors per school. Max post-secondary students 5

## 2. CONTEST INTRODUCTION

### **2.1. Purpose of the Challenge**

To evaluate each contestant's preparation for employment in the field of Engineering Design and Drafting. An assessment of the contestant's skills in performing design and drawing tasks using computer aided design and drafting will be conducted.

### **2.2. Contest Duration**

4 hours, starting at 8:30AM after registration

### 2.3. Skills & Knowledge to be Tested

- Understand and use fundamental commands and processes to create 3D parametric model part files, assembly files, and drawing files
- Use CAD software to produce drawings that comply with the following standards:
  - CAN3-B78.1 –M83(R1990)
  - CAN/CSA-b78.2-M91
  - B97.3-M1982(r1992)
- Use CAD software to create an assembly model from multiple part files
- Produce a working drawing complete with the bill of materials
- Use CAD software to produce a 3D parametric model part file from an existing object and existing shop drawings

### 2.4. Contest Description

Skills and knowledge that may be required to complete the following tasks that may be performed during the contest:

#### Task 1:

- Create an assembly file from provided part files
- Create a drawing file from provided part files and competitor created assembly file that may need to include:
  - Appropriate orthographic and/or cross section views, auxiliary views, details, and an assembled isometric view
  - Parts list and labeling of each component
- **Note:** Part files may or may not include such details as threading, countersunk holes, and patterns

#### Task 2:

- Create a 3 dimensional parametric model part files and any necessary physical sketches utilizing the following provided materials:
  - Provided working drawings of object
  - Provided existing object (for sketching, analyzing measurements and part measuring)
- Parametric model part files may require drawing and modeling techniques including threading, varying hole styles, pattern or mirror feature/sketch, bend, constraints application, utilization of material library, revolve cut, text embossment, symbol insertion, material application and mass calculation via iProperties, shelling, bolted connections
- Create an assembly file from any part files created

### 3. ASSESSMENT

#### 3.1. Point Breakdown (Post-Secondary & Secondary)

Point Breakdown	/1000
Task 1 Assembly File	150
Task 1 Working Drawings	300
Task 2 Physical Sketches	100
Task 2 Part Files	300
Task 2 Assembly File	150

### 4. EQUIPMENT, TOOLS & MATERIALS

#### 4.1. To be provided by committee

- Software: Inventor 2017 or latest version installed at Red River Campus
- Task 1 part files
- Task 2 working drawings
- Task 2 existing physical object
  
- **Note:** If competitor wishes to use other software than that outlined within this scope, the competitor and coach mentor must contact the competition Chairperson no later than the official registration date outlined by Skills Manitoba in order to be accommodated

#### 4.2. To be provided by competitor

- Calculator
- Pencils
- Paper
- Measuring instruments
- USB Stick

### 5. WORKSITE SAFETY RULES / REQUIREMENTS

#### 5.1. No PPE required

### 6. NATIONAL COMPETITION ELIGIBILITY

#### 6.1. A mark of 70% or higher must be scored by the gold medalist in each contest in order for them to attend the National Skills Competition

### FOR MORE INFORMATION PLEASE CONTACT:

Gaetano Nino Caldarola, B. Sc.  
Red River College  
Phone: 204-632-2564  
Email: [ncaldarola@rrc.ca](mailto:ncaldarola@rrc.ca)