



Engineering Drawings Challenge Rules
15 August 2021

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Section 1 Engineering Drawings Challenge

1.1 Purpose

The purpose of the challenge is for students to demonstrate their ability to create industry standard drawings for their robot design.

1.2 Challenge Rules

1. The Engineering Drawings Skill Challenge is an optional activity.
2. The hub will notify participating teams if this this skill challenge is being offered for their competition.
3. The drawings shall be the sole work of students. Drawings from other sources shall not be used.
4. Any 3-D modeling Computer Aided Design software can be used to produce the drawings.
5. The drawings must be delivered as a single PDF file.
6. The drawings must include bill of materials, piece parts and assembly drawing pages sufficient to build the robot without additional knowledge.

1.3 Schedule

1. The hub determines the delivery date and time for submission of the Engineering Drawings. This information will be available on the Team Workflow page in the BEST National Registry under deliverables. Example provided below.

🕒 Deliverables & Due Dates				
Create Item				
	DELIVERABLE	DUE DATE	IS JUDGED	TEAM REQD
				UPLOAD REQD
📌	Driver Schedule	6/20/2020 5:00pm -7 days from Game Day		✓
📌	Engineering Drawings	6/27/2020 5:00pm 0 days from Game Day	✓	✓
📌	Website Design Complete	6/27/2020 5:00pm 0 days from Game Day	✓	
📌	Minecraft Challenge	7/15/2020 12:00pm	✓	✓

1.4 Evaluation

The Engineering Drawings will be evaluated based on the following criteria:

Drawing Accuracy

- Level of depth and detail.
- Size, shape, and appearance should be accurate.

Dimensions and Annotations

- Includes complete dimensioning of all parts
- Dimensions are complete, clear, and concise with no repeat information.
- Annotations are used appropriately
- Dimensions and annotations are appropriately placed, easy to read, and do no overlap important information.
- Consistent and appropriate units of measure

Part Drawings

- Each part drawing should include **orthographic views** (front view, top view, side view) and an **isometric view**.
- All views should be properly placed with no overlapping content and inside drawing borders.
- All views are scaled appropriately for sheet size and match title block.
- Different line properties such as line type and/or colors are used for organization and clarification when needed (i.e., hidden lines).
- Title block includes Title (Name of Part), Team Name, Paper Size, Scale, Drawn Date, Revision Number, and Sheet Number.

Assembly Drawings

- This drawing should include an **isometric view** and an **exploded view**.
- Views should be properly placed with no overlapping content and inside drawing borders.
- Exploded view is neat and clearly shows disassembly of robot.
- Parts list is included and complete. This table should include part number, part name, quantity, and material.
- In the exploded view, parts are labeled with part numbers and match parts list. Labels are easy to read and do not overlap critical information.
- All views are scaled appropriately for sheet size and match title block. Otherwise, a note is added to differentiate scale from title block scale.
- Title block includes Title (Name of Assembly), Team Name, Paper Size, Scale, Drawn Date, Revision Number, and Sheet Number.

Professionalism

- Drawing List or Sheet list is included
- All drawings are properly formatted ANSI C (22x17") paper size.
- All PDF drawings file(s) are included and no errors encountered when opening files.
- File naming convention is clear and professional
- Professional overall appearance of drawings including logos, appropriate text size, title block, notes, and more.
- Spelling and grammar are correct.

Overall Application and Understanding

- Demonstrate understanding of CAD and drawing creation
- All information is present
- Parts could be manufactured from these drawings

1.5 Awards

1. The team scoring the most points on the evaluation will receive the 1st place award for this skill challenge.
2. The hub, at their discretion, may award additional teams based on how they place.