

69th High School Design Challenge

Rules and Guidelines – Engineering Design



Engineering Design Challenge Overview

The Engineering Design Category challenges drafting students to develop a design solution to a given automotive-based problem. Consideration is given to the design's innovation, functionality, appearance, mounting and/or attachments. The Creative Engineering Category utilizes drafting/CAD skills and must be submitted on paper as a properly made engineering drawing using orthographic projection.

Eligibility Requirement

- 9-12 grade students with a background in computer aided design (CAD).
- Schools can have multiple student entries.
- 1 entry per student.

Research and Support

Contestants are encouraged to research the project before beginning and may seek out advice during this early stage; however, the design and submission must be the creation of the contestant.

Judging Criteria

- Creativity of the design
- Clearly defined functionality of the design
- Ability to be assembled
- Serviceability
- Clearly defined fastening and joining methods
- Principals of proper engineering drawing; necessary views shown, overall design appearance

2023/24 Engineering Concept Category

The Engineering Design Category requires the student to create a functional design of a front mounted protective brush or push bar including the supporting posts or brackets and attachments. A digital model of a portion of the vehicle front sheet metal and structure will be provided in the form of an STP file from which to build the design using any CAD system available to them.

- The bar must be a separate assembly consisting of the bar itself and at least two or more attaching posts or brackets and attached with some form of fastening system. The fastening methods must be fully defined.
- The bar assembly needs to be clearly defined using necessary auxiliary views and sections.
- The fastening system, using screws, bolts or other forms of attachments must be clearly defined by necessary views and sections along with any seals or gaskets.
- Each part of the bar assembly must be shown in orthographic projection using at least two views. Section, auxiliary; iso views can be used as needed to fully describe the wing and post or bracket assembly to clearly show how they fit together and are assembled.
- The design of the bar system must not include the name of the student, school, school logo, or otherwise identify the student, school, or the school district.
- Each component of the design must be labelled with part name and material. Student can use a parts list and number system to identify parts on the same orthographic view as needed.
- Fasteners and other attachment methods must also be shown in their proper assembled position.
- All views need to be carefully, correctly, and logically arranged and spaced on the sheet.
- No dimensions need to be shown on the drawing.
- An exploded pictorial assembly view may be used but is not required.

Register as Participant

Let us know you are working on the project so we can stay connected throughout your design process.

Register on website:
www.asbefoundation.org

OR

via QR code below:



Submission Date

Friday, March 22nd, 2024

Submissions to

(emailed or delivered):
asbe Design Challenge
Shannon Williams
swilliams@misd.net

Macomb Intermediate School
District
44001 Garfield Rd.
Clinton Twp, MI 48038

Awards

1st Place = \$400

2nd Place = \$300

3rd Place = \$200

4th-8th Place = \$100

Submission Requirements and Format

The Engineering Design category has new drawing format size requirements as well as submission instructions.

- The entry must be on a single sheet or display board no larger than 11 x 17 inches.
- A physical model of the brush/push bar system may be submitted with the drawing but must be less than full scale. (Maximum - five pounds)
- Physical models and/or display boards must be submitted in person. If you are submitting a design on an 11 x 17 single sheet w/ no models or display boards, your submission can be done through email.
(See physical address and email address on the left)
- Supporting written documentation describing the design, choice of materials, cost considerations, and any unique design features, etc. is encouraged but not required. If separate, the documentation should be an 8 ½ x11 printed document submitted along with the 11 x17 plot in the same e mail or submission.
- The entry is to be identified with the "Student Information Block" that is included with the contest materials. The "Student Information Block should appear in the lower right-hand corner of the print. It should be printed and attached to any physical models if they are submitted. Student Information Block should include students name, grade, school, and teacher. Student and school information will be masked during judging.

Note: The clear and complete depiction of all necessary views to define the brush bar and any assemblies and fasteners are a critical consideration in the judging of your entry.

Questions Regarding Design Challenge

DesignChallenge@asbeFoundation.org

Award Dinner

Winners of the Design Challenge and their teachers will be invited to attend the annual Awards Dinner celebration as our guests. This event will be held on April 18th, 2024.

Photos of past winners and Awards Dinner speakers are posted on our website at: www.asbefoundation.org