



## Competition and Rules for MSDC

*Engineering Open House 2020*

*A Century of Innovation*

*Middle School Design Competition - Egg Drop Challenge*

**Where:** Electrical and Computer Engineering Building

**When:** Saturday, March 28th, 2020, 8 am-3 pm

## **Objective**

Design and create the lightest egg-drop device that protects an egg from breaking when the device is dropped from a specified height to the ground.

## **Ground Rules**

### **Size Limit**

10 in. x 10 in. x 10 in. maximum. For any groups who plan to incorporate a parachute, the open chute must fit within the given size limit.

### **Build Specifications**

The egg-drop device must be constructed using any of the following materials: styrofoam cups, rubber bands, paper clips, string/yarn, cotton balls, balloons, plastic straws, scotch tape, printer paper.

The egg-drop device must be designed so that an egg inside a small snack-sized sealed Ziploc bag can be easily placed in the device on the day of the competition, in order to eliminate mess of competition space and egg-drop devices.

Each egg-drop device must be labeled so the Event Supervisor can easily identify the team to which it belongs. Feel free to paint or decorate your egg-drop device as seen fit! This year, the theme for Engineering Open House is “A Century of Innovation.” See whether your car can fit the theme as best as you can, whether it is some out-of-the-box design or some super interesting bounds on your device! But, keep in mind the design specifications and see what you can create that is unique and special.

### **Practice**

A practice space will be open and available for use at any time prior to their official testing. One marked egg will be provided to each team for practice. Using an egg other than the one provided will be grounds for disqualification.

### **Official Testing**

Egg-drop devices must be dropped straight downwards from a second story height. A marked egg will be provided at the time of the contest. Using an egg other than the one provided will be

grounds for disqualification. You must be able to secure an egg in the small snack-sized Ziploc bag and drop the egg-drop device within a 5 minute timeframe.

There will be judges present who are properly instructed on using testing equipment, who will be making the final judgement regarding whether the egg-drop device successfully completed the challenge. In addition, judges will take the official measurement of the device's weight, without an egg in it.

The official testing slots will be determined on a first come-first serve basis when a team checks in at the beginning of the day.

### **Presentations**

Each group must be prepared for up to a 10 minute presentation time period, by having a standard tri-fold 3-5 minute presentation accompanying the egg-drop device. It should describe their design process and the benefits of their chosen implementation. 2 judges will have 2-3 minutes to ask questions after, and then judges will move to the next team. The same 2 judges will judge all teams in order to maintain consistency.

The presentation time slots will be determined on a first come-first serve basis when a team checks in at the beginning of the day.

### **Overall Judging**

A team's score is made of two components: performance during official testing, in addition to their presentation. Scoring for performance during official testing is based on egg survival and device weight. Each team's device will be weighed without the egg before the drop, and the weight in grams will be recorded officially by the judges.

After each device is weighed, team rankings will be made in order of lightest to heaviest weight. Depending on performance during testing, the teams whose eggs crack will be eliminated and lose their ranking. Scoring for performance during the presentation is based on specified criteria the judges will evaluate. Each team will receive a certain number of points, with the least number of points being more desirable.

The team's final ranking will be determined by adding their presentation points to the weight of their device, for the remaining qualifying teams whose eggs did not crack. Then, the 3 teams with the lowest 3 final numbers are declared the first, second, and third place winners.

Judges will have the final say in regards to whether materials used in the egg-drop device are qualified under competition rules. If you have any questions during the build process, feel free to reach out to me! I have included my contact information at the end of this rule booklet.

Teams with construction or competition violations must be ranked after all teams that do not violate those rules. Ties are broken by a second egg-drop.

### **Additional Information**

Each team will be provided one small snack-sized sealed Ziploc bag at the time of registration in order to place their egg in for testing and practice. If teams are found using eggs for any purposes besides practicing or testing, they will be disqualified.

Additional information will be sent out closer to the competition date. In February, a video will be sent to all the teams that have signed up with a sample egg-drop device designed by the EOH Central Committee.

### **Awards**

Awards for being the lightest and most successful egg-drop carrying device will be given to the 1st, 2nd, and 3rd place teams in regards to points. Additionally, these awards will be given:

- Most Aesthetic
- EOH Theme Award (Most Innovative)
- Best Presentation
- Enthusiasm Award

### **Design Considerations**

Really try and get your students to figure out what would make their egg stay the most protected. How can the materials be most effectively configured to provide maximum padding? What type of materials will allow for the lightest design?

### **Contact Information**

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Engineering Open House