

The Ride of your life!

Caltech has decided to go into the theme park business. President Baltimore would like ME 71 students to generate ideas for rides that could be constructed in Caltech's new theme park. In groups of roughly 4 students, you are tasked with developing a theme park ride concept, building a scaled down mock-up, and demonstrating the ride concept to the ME 71 class and to a group of judges.

Rules

- Each team will consist of 4 members (3 members if necessary, or better, 5 members)
- You must conceptualize, build, and demonstrate a mock-up that demonstrates your ride concept. The mock-up is intended to show they key concepts of your ride, and is not intended to demonstrate the underlying engineering issues that may be encountered by engineers that would have to build your design in detail.
- Your mock-up must be constructed from the list of materials given below.
- Your mock-up must include at least one "gondola" or "car" type component where humans would ride in the full sized version of your ride. You can build other ride components and embellishments as desired from your materials.
- The "path" of your ride must minimally circumnavigate the contest route, which is described below.
- You may use as much additional material as you like for personal decoration of your team members (i.e. costumes).
- Your team has 3 minutes to set up in the contest area.
- Your team members must nominally be fixed in their places throughout the ride duration. During one circumnavigation of the contest route, you are allowed two repositionings of your team members (e.g., two people may move once, or one person can move twice).
- One circumnavigation of the contest route can not last less than 30 seconds nor more than 90 seconds.
- You must circumnavigate the contest route twice.
- Your ride concept can change during the second circumnavigation, but need not.
- Your team has 2 minutes to remove all of your materials from the contest area.

Materials for the Contest Prototype

- 4 standard rubber bands
- 1 standard coat hanger
- 8 standard paper clips
- 8 wooden dowel rods (5/8 diameter or less, 3 feet long)
- 100 ft. of string
- 2 cubic feet of Styrofoam or other foam cell modeling material
- 2 2-liter plastic beverage bottle
- 5 sheets of foam core (32 inch X 40 inch X 3/16 inch thick)

- Up to 6 linear feet of cardboard cylinders (e.g., toilet paper roll cores, or mailing tubes)
- Glue (e.g., Elmer's glue, rubber cement, etc.), as much as necessary, but not for structural purposes
- Hot Melt Glue (as much as necessary, but not for structural purposes)
- Up to 20 sq. ft. of Saran Wrap or other thin plastic.
- Paint, color markers, or other materials to color and decorate your components.

The wooden dowels, modeling foam, foam core material, and glue will be provided in the ME shop.

The Contest Route

- Your ride's gondola(s) must traverse a closed route of no less than 46 feet in length. For example, a rectangular path whose width is 10 feet and whose length is 13 feet would satisfy this requirement. Note that the narrowest part of the route can be no less than 5 feet across. The height at which the gondola traverses the route is immaterial. The moving gondola can not touch the ground, though other parts of your design may touch or rest upon the ground.

Judging your Contest Entries

The overall grading of your contest entries will be based on two gross components:

- the quality of the design process that lead to your final product; and
- the quality of your result, as seen on contest day. This includes the creative aspect of your design, the quality of your mock-up's construction, and the effectiveness with which you conveyed your ideas.

The process of judging the creative aspect of your efforts will include:

- The creativity of your ride's "theme". Is the theme interesting, original, fun, exhilarating, educational, etc.?
- The expected quality of the ride experience. That is, if your ride were actually scaled up to full size, would humans enjoy riding on your ride?
- Did you effectively use your materials in presenting your idea?
- Are your ride components aesthetically pleasing?
- Do your ride components fit into your overall theme?

We will judge your design process based on the following components:

- The quality of your "poster session" presentation.
- The evidence of a good solution generation (brainstorming) phase, as seen in your design notebooks.
- The ability of your team to work well together when presenting your theme park ride idea.

Schedule:

- Poster session: Thursday, April 14, in class
 - o Your team must present a poster in class that describes your initial concept, and rough sketches of two alternative ideas that your team developed.
 - o The poster should be visually appealing, and give the viewer a sense of the ride, and the key objectives of your design.
- Documentation of structured design concepts (objective tree, function flow chart, and morphology chart): Tuesday, April 19.
- Key mechanism prototype demonstrated: Thursday, April 21.
- Contest day: Tuesday, April 26, in class.