

ME 72 Mobility Demo

Friday, December 3, 2010 9:00am -10:30 am

ME Shop

Clearly, to perform well in this year's contest, your device(s) must be able to maneuver adroitly around the contest arena. Your goal in this assignment is to construct a radio-controlled proof-of-concept prototype of one of your mobility vehicles. You will have 5 minutes to demonstrate your vehicle's ability to drive over the floor and all 3 terrain elements.

The following is a rough grade breakdown for the mobility demo, out of 100 points:

- 50 points: Vehicle can drive in a straight line and turn in both directions along a flat surface (namely, the shop floor).
- 75 points: Vehicle can drive on the shop floor, and successfully traverses one element.
- 100 points: Vehicle can drive on the shop floor, and successfully traverse two elements.
- 125 points: Vehicle can drive on the shop floor, and successfully traverse all three elements. (Yes, this is extra credit)

We will add or subtract points from this baseline based on the following:

- Design quality. Did you think through all of the details needed to turn your conceptual design into a workable and buildable device?
- Quality of fabrication.
- Traversal time.
- Controllability. Does your device respond well to steering commands?
- Maneuverability. Can you design make tight turns?

The demo will occur on the subscale models of the terrain elements in the shop – water, rocks, and sand. The subscale models will be of the same height as in the competition, but smaller in length and width. Ramps will be as those specified for the competition. In order to successfully traverse an element, you must drive up the ramp (or over the side), cross the element from one side to the other without human intervention (lengthwise or width-wise), and exit the terrain element in a controlled fashion. This means that we will deduct points if you cross the element but then flip over upon exiting.

Please note that there will be a moratorium on contest vehicle construction at 9am on Friday morning; you may not be making any major changes to your vehicle during the demonstration time. You may, however, do simple repairs *after you have already attempted the course*. If there is time remaining after all teams have attempted the course, we will add any teams that wish to the queue for another try.

Additional Rules:

- Your device must operate under radio control.
- You must convince us before your trial that your device is safe and will not cause harm to the class spectators, the surroundings, or radio kits.
- Your design must exhibit a clear developmental path from your proof-of-concept prototype to a contest entry.