

Design Contest
ME72 Engineering Design Laboratory
Fall & Winter Terms, 2006-07
Three Design Alternatives Assignment
Mockup Assignment

Assigned: **Thur, 19-Oct**

Due: Bring with you to the Preliminary Design Review on **Thur, 26-Oct at 12:00 pm**

1. As a team:

- (a) Describe in sketches and words three (3) different design alternatives for each teammate's device (3 pairs of devices). The alternatives should be significantly different in the way that each accomplishes its tasks, as opposed to different in details alone. The description of each device should be 1 to 2 pages long. The idea is to communicate your ideas clearly:

- How will the device work?
- How will it interact with your team-mate's device?
- How will it be built?

For each design alternative describe the overall team strategy: How will the devices work together?

Include a list of pro's and con's for each design alternative.

- (b) Describe how each of the three design alternatives will meet the objectives, requirements, constraints, specifications, and desired functions that you listed in the previous assignment.
- (c) Combine your objectives, requirements, and functions (from your previous assignment) with your teammate's and work together to try to expand your design space. Brainstorm to expand your morphology chart with more alternatives. Try to add more functions/subfunctions, more objectives, and more requirements as well. Expand your written evaluation of the pros and cons to reflect these additions.

2. Each teammate:

- (a) Build one (1) full-size mockup of one of your three design alternatives (out of cardboard, paper, tape, drinking-straws, film cannisters, plastic bottles, *etc.*). Include the major components, *e.g.*, the motors, the transmissions. Show how you and your team-mate's mockups would be able to fit together to meet the size constraint. This can also be a (3-D) CAD software "mockup", if you prefer.
- (b) Be prepared to describe how your teammate's device is intended to work, and how it will work with your own device, at the Preliminary Design Review.