

Design Contest
ME72 Engineering Design Laboratory
Fall & Winter Terms, 2006-07

Grading

5% Objectives, Requirements and Functions (5% Individual)

5% Three Design Alternatives (5% Team)

5% Mockup (5% Individual)

5% Engineering Analysis Calculations (5% Individual)

5% Prototype of 1 Key Working Element (5% Individual)

By this due date, one key element of one design must be built as a prototype for testing.

5% Prototype of 1 Key Function (5% Individual)

By this due date, one key operating contest function must be built and its operation demonstrated.

5% Device Fabrication Complete (5% Individual)

By this due date, the first version of your design must be completely fabricated.

5% Device Scoring Function Test (3% Individual, 2% Team)

By this due date, your device must demonstrate legal compliance with all the contest rules, and must satisfy the minimum performance to successfully compete.

40% Contest Device:

10% Overall Concept (5% Individual, 5% Team)

This is the overall idea of solving the design problem: *e.g.*, wheels or tractor or airplane or catapult, string-drive or belts, *etc.* The team component is based on evidence (in the notebooks and devices) of team discussions and conceptualization (throughout the term) and on division of functions, mass, volume, *etc.*

10% Details (10% Individual)

This category is for evaluation of the details of the design: *e.g.* how are the joints and fasteners designed, how are the bearing mountings designed, *etc.*

10% Execution (10% Individual)

The grade for execution primarily relates to fabrication. How you implemented the concept(s) and details you designed: *e.g.*, did you learn how to drill a straight hole, turn a diameter, and mill a flat surface, or does your device look as if it was whittled out with a pen-knife, *etc.*

10% Planning (5% Individual, 5% Team)

In addition to meeting the milestones (above), this category evaluates your ability to have planned ahead, especially with regard to leaving enough time to build and test, modify and tune your design, as well as practice using it. Sketches and notes in your design notebook, along with the design reviews and other meetings with the instructors, are the *only* way that your planning can be evaluated. If you don't show the instructor(s) what you are doing during the term, he will have to guess at your planning, a process that usually results in a low grade.

Team planning is evaluated based on evidence in the notebooks of meetings and discussions between team members regarding milestones, functions, competition strategy, results of testing and team sparring, *etc.*

10% Design Notebook (7% Individual, 3% Team)

Show us, in your notebook, the process you undertake; explain what you are doing and thinking as your design evolves. Make notes about what works, and what doesn't, include sketches. If you see or learn of a design alternative from a classmate, TA, instructor, *etc.*, that you consider, make a note (in your notebook) of the source of the idea or concept and circumstances. When you test or spar with your device, make notes on what broke, what you learned, and how you applied your new knowledge.

10% Design Process and Collaboration (5% Individual, 5% Team)

This category evaluates how well you coordinated with your teammate to meet the functional requirements of the task and the size and weight constraints. It also evaluates how well you learned and practised the material from class concerning suggestions for the process of engineering design. For example, did you seriously consider several alternative designs, or did you adopt the first solution that occurred to you.

Evidence of collaborative team design is found in the notebooks as descriptions of meetings and discussions with your teammate and discussions of alternatives to alleviate problems that have arisen with your device(s).

100% Total (75% Individual, 25% Team)