Meeting #7

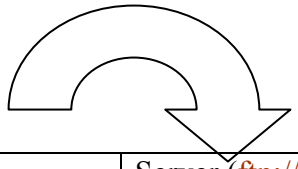
In writing you logbook, make sure the questions in bold prints are addressed. From meetings 1-6, in addition to learning about engineering, brainstorming technique, and internet search strategies, you also developed some strategies in making an oral presentations and directing/acting in a movies clips. You can now answer the following questions:

Short-presentation and video clips techniques:

Topics	Questions
-Content:	1.-Should the content level be adapted to the audience's background? 2.-Should all little technicals details or equations be included for a thorough step-by-step understanding? 3.-Should some specific factual data be included or general ideas are sufficient?
-Visual aids/Presesntation techniques:	1.- When possible, should I use graphs/tables or words better (easier to read)? 2.- Should the talk relate to daily and local issues/topics? 3.- How should a picture be chosen?
-Time management/audience	1.- Should I plan to use 60-70% or 90-100% of allowed time? Why? 2.- Should I focus on delivering completely my talk or gearing it towards the audience interest knowing that something will be left out? 3.-Should I practice to fit into the allowed time or learn to adjust during the talk?
-Video clips	1.- Should I test drive a camera to check on focus and sound adjustment before actual recording? 2.-Should the script involves a story, humor, or other simple cinema techniques? 3.-Should interviews, scenes that are not accesible from the classroom be part of the movies?
-Proposals	1.-Should some time be spent on analyzing the feasibility and impact of a proposal? 2.-Should supporting elements be included in a proposal? 3.-Should possible outcomes of the proposal be explained or sketched?

More graphical instructions for the Webmaster

Instructions for building a webpage can be found at
http://www.faculty.umb.edu/tomas_materdey/103s05/files/webinstr.html



Computer hard drive/disk	Server (ftp://www.students.umb.edu)
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index_files/pic1.jpeg	index_files/pic1.jpeg
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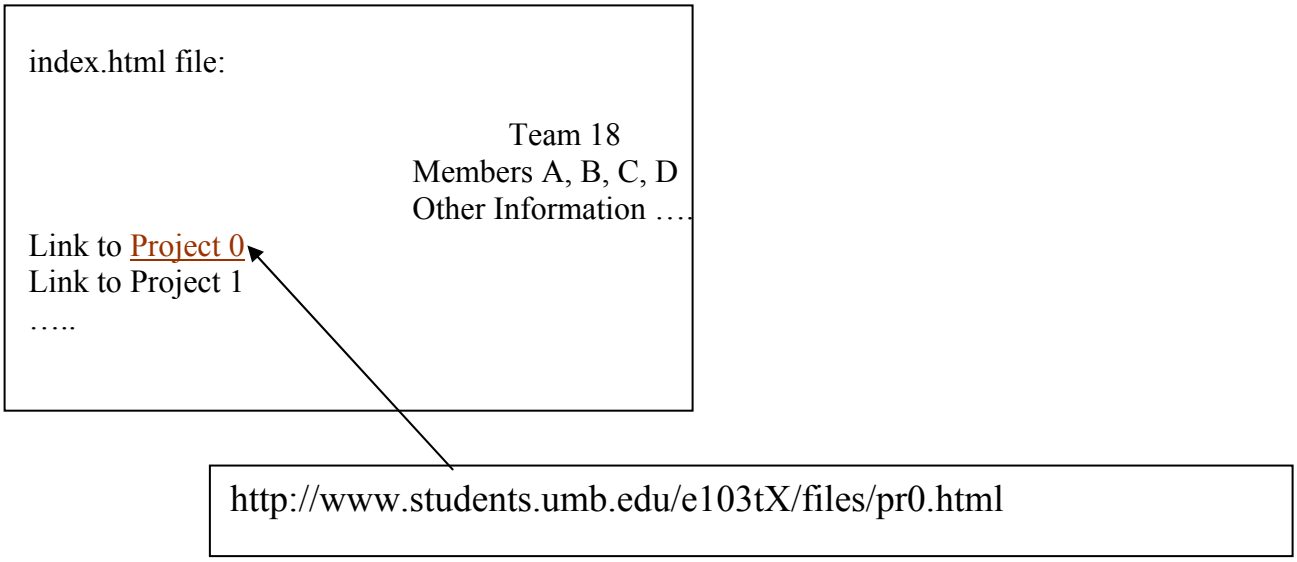
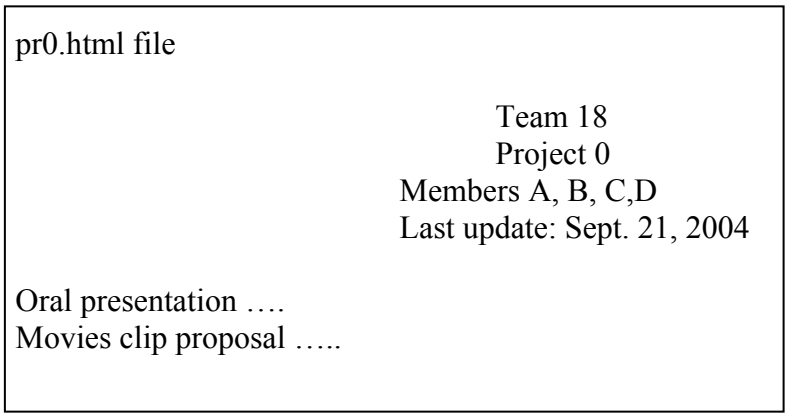




Engineering Design

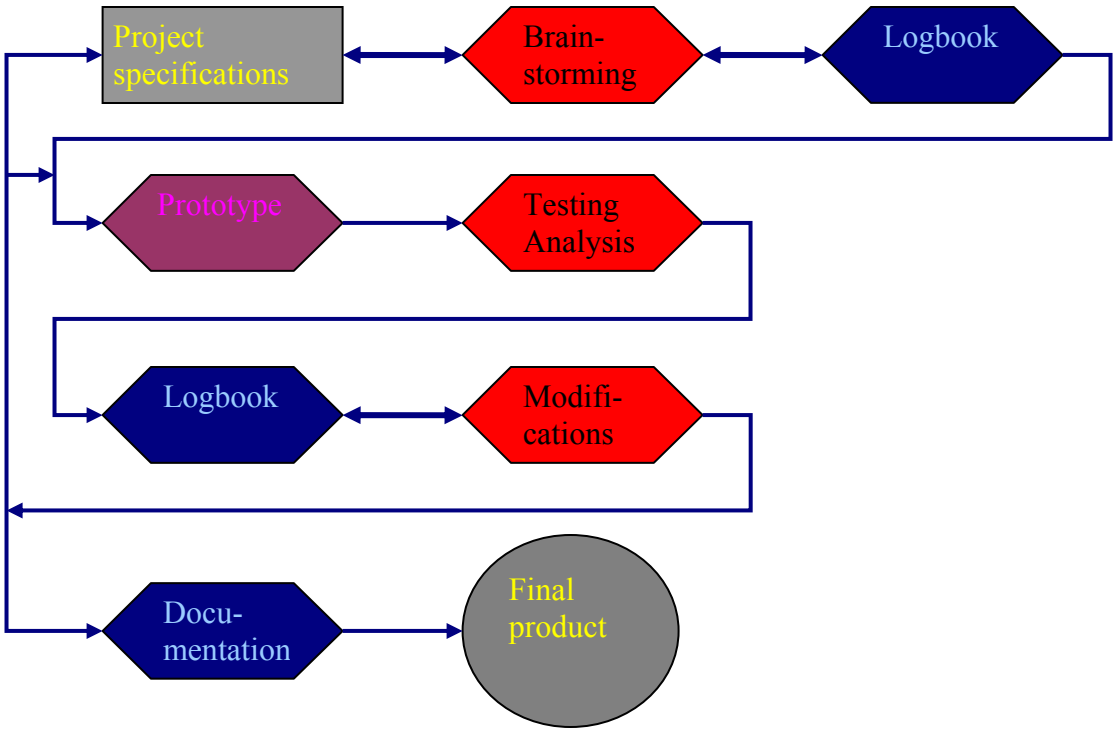
Project 1 will involve a design problem. Unlike an analysis problem, a design problem starts with multiple possible solutions for which a best solution will be chosen at some stage during a design cycle to satisfy the project specifications which may impose, physical, time, cost and other restrictions. Analysis is performed at a later stage of the design cycle when a best option has been selected.

A good design involves the following elements

1.- Works all the time

2.- Meets all technical requirements
3.- Meets cost requirements
4.- Requires little or no maintenance
5.- Is safe
6.- Creates no ethical dilemma

A design cycle includes these stages:

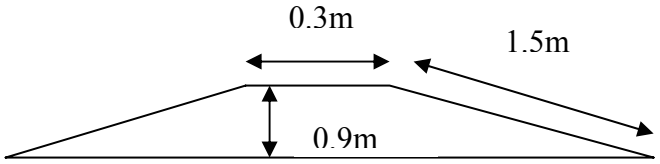


As you can imagine, lots of time and money can be saved when a prototype turns out to be very close to the final product, i.e. you just need to go through the design cycle once. This will not always be the case, but there is more chance it is so when more work is put into the brainstorming stage. But if it cannot provide a clear picture of what the best prototype would be, then we will have to move forward with one prototype and wait for the testing and analysis stage to help in the decision-making process.

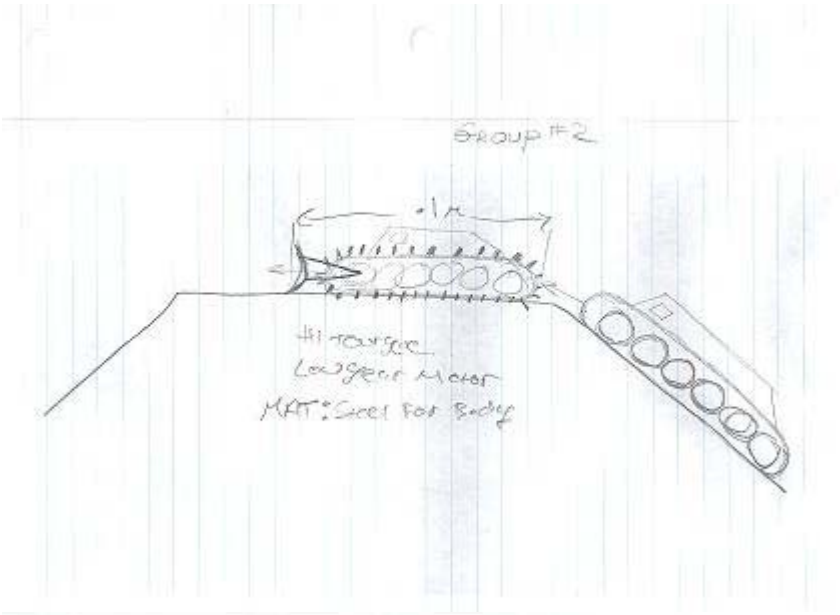
The time frame and availability of materials also shape the prototype and final product. We cannot hold on to a 'perfect' mechanism if materials for it will not be available until after the project deadline.

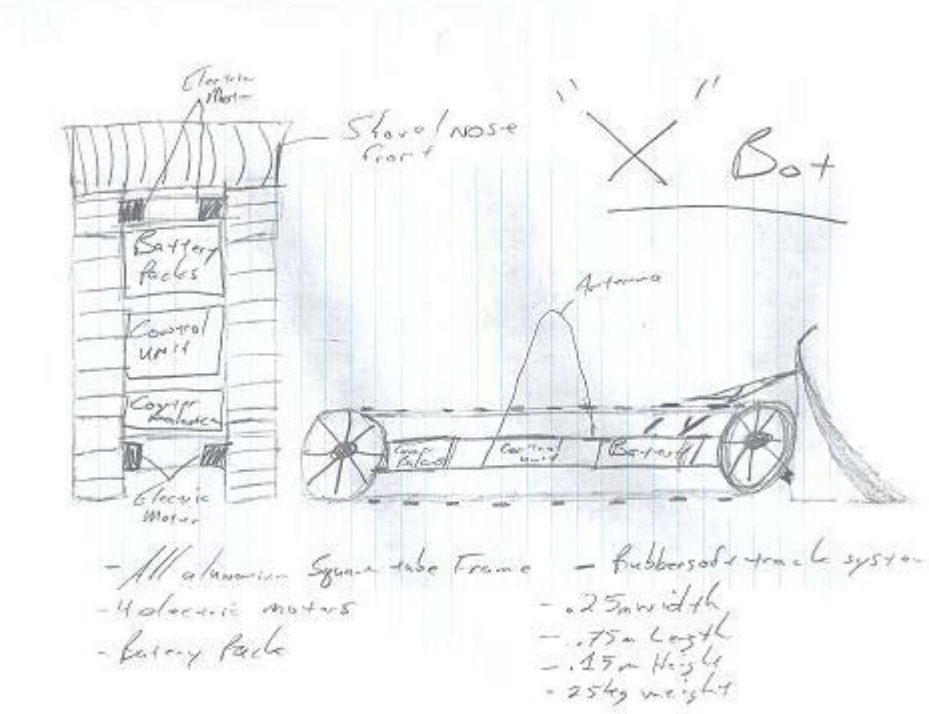
Once more the importance of logbook cannot be overemphasized, it is clearly a key element in a design process. Indeed, it is considered as an engineering design tool.

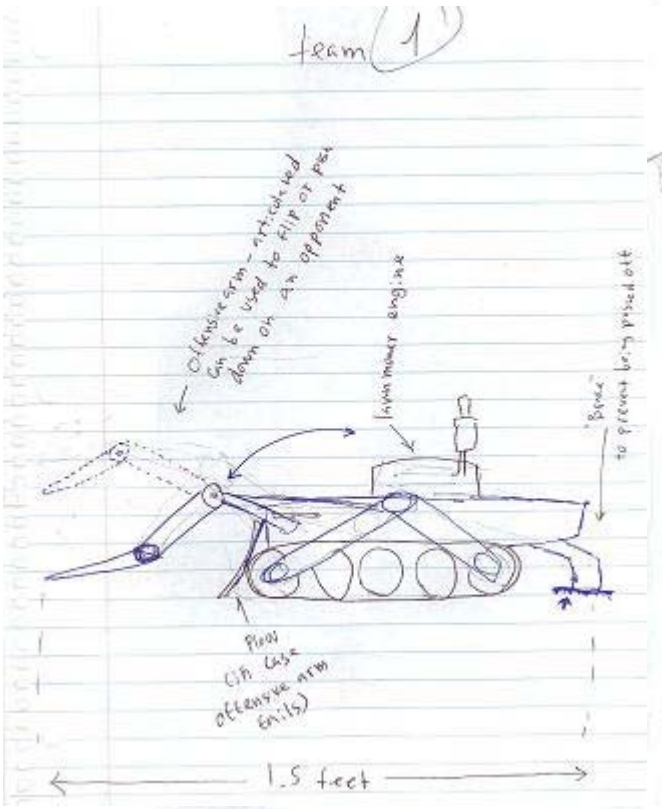
As an example of multiple solutions in a design problem, the different teams were asked to provide via a sketch (including shape, size, and materials) a design for a vehicle that could climb up a ramp and hold against an opponent at the top flat portion

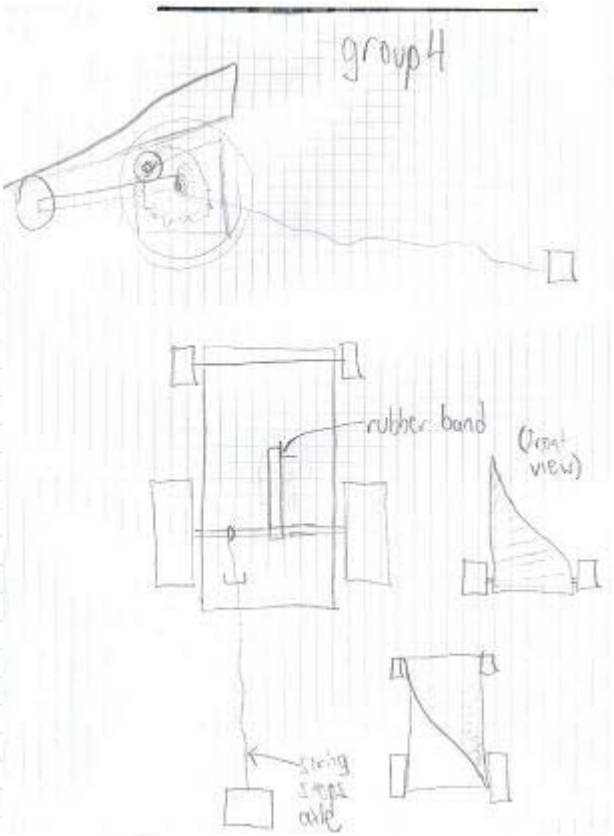


The teams returned the following:

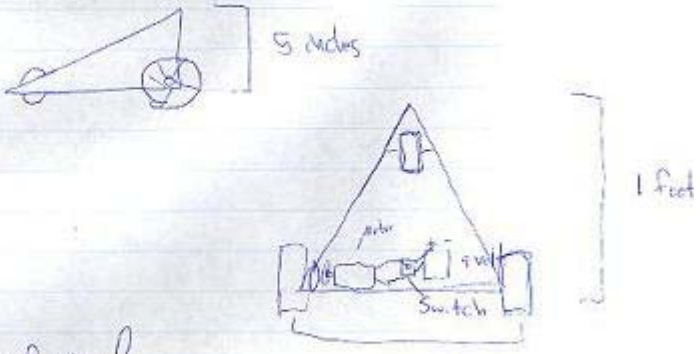




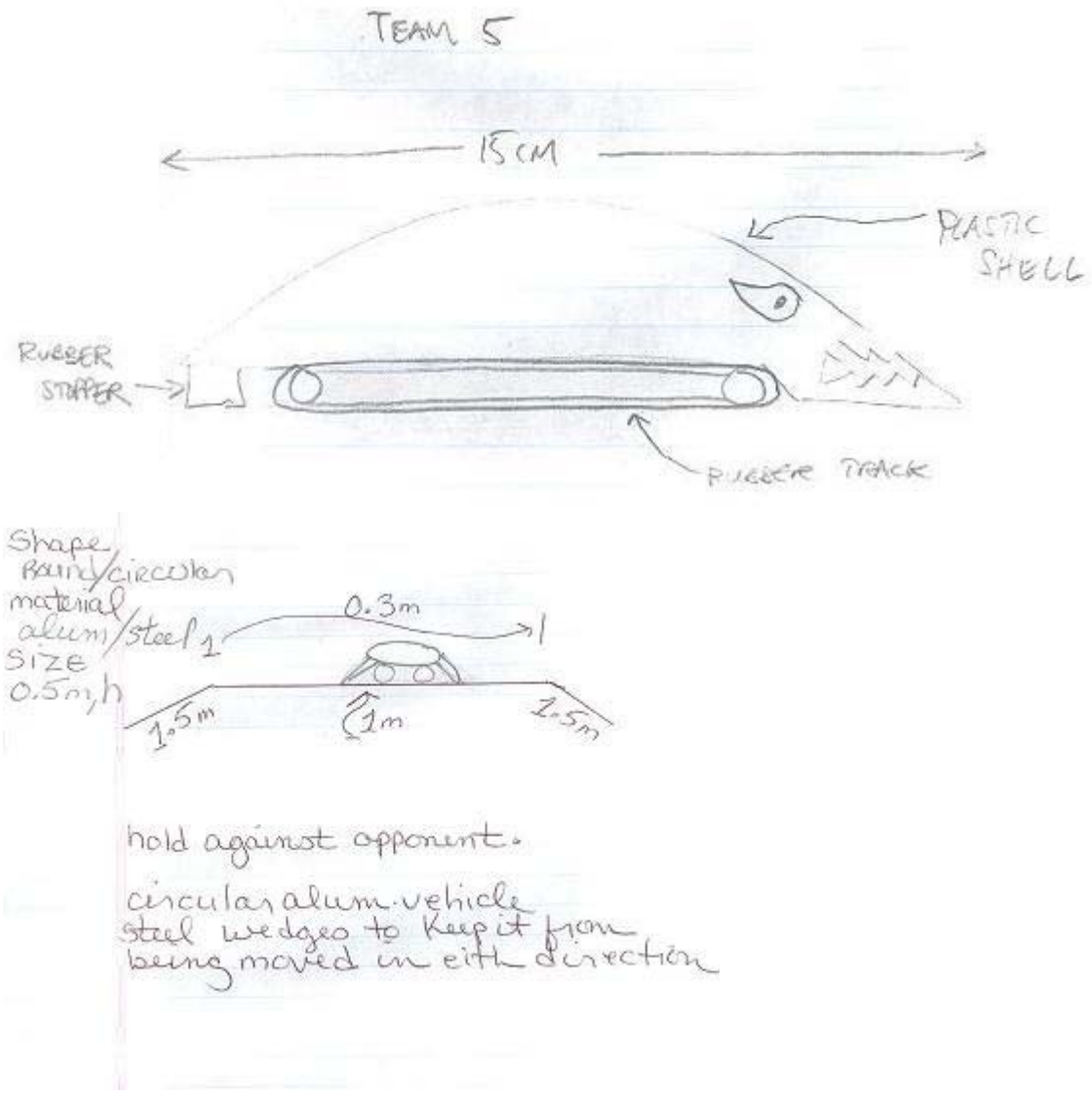




Group 6



Body made of wood



As you can see, there is no unique solution to a design problem.These design solutions are all different. The first three can be described as using offensive strategies that focus on higher traction using catepillar wheels and power at the arms, while the last three use defensive strategies based on shapes and simpler designs. A best option can be chosen when more specification are given.

Project 1: Gears and their impacts on civilizations

Just a couple of examples: gears combination that changes the direction of transmission, such as in the figure below.

And gears with smaller diameter that allow a same torque to provide more traction force, such as when you lower your bike gears while going up a ramp.