

**Engineering 100**  
**Project #4**  
**Robot Race**

**Spring Quarter 2009**

**Project:**

Design and build a robotic using LEGO Mindstorms Robotic Invention Systems to compete on an obstacle course.

**Course Design:**

One person from each team will design the course. (See attached list for names.) No robots are allowed on the course during the design process. The course must be removed at the end of the class period and then set up again the following class period. Include in the racetrack the events shown in the table below. Feel free to add addition challenges or substitute a challenge.

Possible suggestions for material used in the design of the course include (but not limited to): black tape, plastic cups, straws, beans, binders, books, and marbles, paper----

**Racetrack Rules:**

1. Robots will start from rest. A penalty of ten percent of your total time will be added each time the robot is touched while on the course.
2. Each robot will get four tries to complete the course. Default time will equal slowest time in competition plus 10 seconds.
3. Determine score using the formula shown below:

**Score:**

$$\text{Score} = 75\left(\frac{\text{Pts}}{\text{Pts}_{\max}}\right) + 25\left(\frac{\text{T}_{\min}}{\text{T}}\right) + \text{Design pts}$$

**Where:**

**Score** = Final total points

**Pts** = Total points earned

**Pts<sub>max</sub>** = Highest point score of robot in competition

**T<sub>min</sub>** = Fastest time for robot to complete course in the competition

**T** = Total time for robot to complete course in competition

**Schedule:**

**Race Day**  
**Check in kits**

## Score Sheet

Team number: \_\_\_\_\_

	Pts							
Run		#1	#2	#2	#4			
Black line	10							
Turn corner	10							
Ramp (up)	10							
Ramp (down)	10							
Sand	10							
Complete course	20							
<b>Total Points</b>	70							
Touched robot (#)								
Total time								
<b>Total time + penalty**</b>								
<b>Design</b>	20/15/10							

\*\* show calculation here for Total time + penalty: