

## **Fourth Annual Laser Truck Rally – January/February 2013**

BYU Department of Electrical & Computer Engineering

**Website:** <http://www.et.byu.edu/~bmazzeo/LTR/>

### **Important Dates:**

Friday, January 11, 2013: Registration opens at 9 AM.

Tuesday, January 15, 2013: Registration closes at 5 PM.

Thursday, January 17, 2013: Cars available for pick-up at the ECE office.

Monday, February 18, 2013: Track set up for practice – location and time TBD.

Wednesday, February 20, 2013: Competition in the Garden Court of the WSC from 11 AM - 1 PM.

### **Registration:**

Each team must be composed of 1-3 students. Registration will open at noon on Friday, January 11<sup>th</sup>. Space is limited to 7 teams, so please sign up early if you want to participate! (Past competition sign-ups have filled up rapidly.) To sign up, at least one team member must present himself/herself at the ECE office with a student ID. Each team will be required to sign a statement that indicates a commitment to have an entry prepared for the competition on February 20<sup>th</sup> at 11 AM.

### **Guidelines:**

Each team will receive one New Bright R/C car with a rechargeable 9.6V battery. (The cars this year are larger and more powerful than those used last year.) In addition, each team will have an allocation of \$25 for supplies from the ECE shop. Incidental supplies not available at the ECE shop may be purchased from retailers, but all purchases must stay within the \$25 total limit. Teams must provide receipts for any supplies not purchased at the ECE shop. However, you will not be reimbursed for supplies obtained outside of the ECE shop. Some small incidental supplies (i.e., tin foil, tape, solder, etc.) will be available for general use in the ECE shop, and will not count toward your allocation.

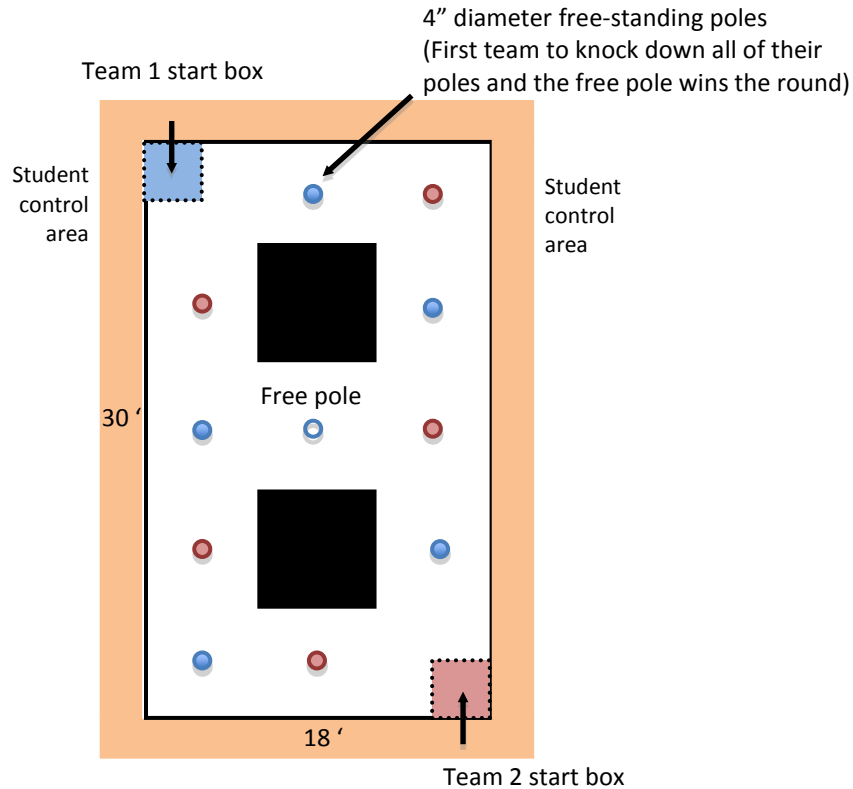
Teams are allowed to use any of the parts within the provided truck, but the truck cannot use any power supply beyond the included batteries.

The only control mechanisms for the truck allowed are two Class IIIA laser pointers at 650 nm with a power rating of <5 mW each. We will be providing versions of these lasers that are modulated at 10 kHz. We suggest that you use these and build filter circuits to screen out ambient light. They will be available in the shop to test with your vehicles. You **are not** allowed to use the electronics in the R/C unit to wirelessly transmit to the truck's receiver electronics. This year's competition will require trucks to compete simultaneously head-to-head on the course, and thus you need to eliminate the possibility of RF interference. Details on how to tap directly into the control board on the truck from your logic circuit are provided at the competition website.

The truck and associated electronics must fit within a 20" x 18" x 18" cube during the entire competition. Please mount the electronics securely so that the truck remains intact in the event of a collision.

**Competition:**

For the final competition on Wednesday, February 20<sup>th</sup>, the cars will be paired into a series of head-to-head matches. The competition arena is diagramed below. For each match, two competing teams will start in opposite corners of the arena as shown. Students are allowed to control their cars from the shaded student control areas at the sides of the arena. A match is won when all of one team's poles and the "free pole" are knocked down. Poles knocked down by the wrong team remain knocked down (to the other team's benefit). The duration of each match will be limited to a maximum of 10 minutes in the event that no team has won in that time. At that point, the match will be called based on which team has the most poles down. A tie is an allowable result.



Specific details of the competition organization and logistics will be announced the week prior to the competition.

**Prizes:**

Prizes are yet to be determined. All teams will be allowed to keep their hardware. 😊

**Exceptions:**

Rules questions must be put to the rules committee, and a ruling will be posted by e-mail to the participants and posted on the web site. Any additional rule changes will also be communicated via email and the web site.

**Rules Committee:**

Brian Mazzeo, Neal Bangerter, Dick Selfridge, Jim Archibald, and Aaron Hawkins.