

Third Annual Laser Truck Rally – April 2012

BYU Department of Electrical & Computer Engineering

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

Important Dates:

Wednesday, March 14, 2012: Registration opens at 9 AM.

Friday, March 16, 2012: Registration closes at 5 PM – pick up cars at Dr. Bangerter's office.

Friday, April 7, 2012: Track set up for practice – location and time TBD

Wednesday, April 11: Competition in WSC from 1-3 PM.

Registration:

Each team must be composed of 1-3 students. Registration will open at noon on Friday, January 14th. Space is limited to 10 teams, so please sign up early if you want to participate! (The 2010 sign-ups filled up in several hours.) 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 April 11th at 1 PM.

Guidelines:

Each team will receive one New Bright R/C car with an accompanying supply of batteries. (The platform is slightly modified from that used last year.) In addition, each team will have an allocation of \$20 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 \$20 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 7 AA batteries originally required. Note that only 5 of these AA batteries are needed to power the truck, while the other two are required for the R/C controller that you will not be using. Thus, you can use the two additional AA batteries in whatever way you want on your truck.

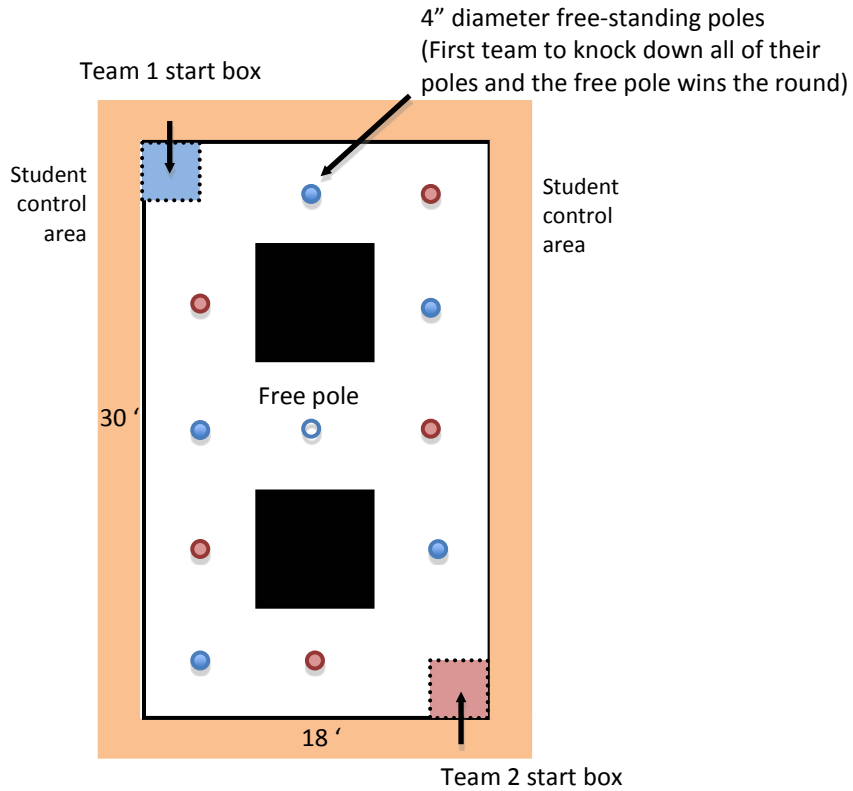
The only control mechanisms for the truck allowed are two Class IIIA laser pointers at 650 nm with a power rating of <5 mW each. We will be providing versions of these lasers that are modulated at 10 kHz. We suggest that you use these and build filter circuits to screen out ambient light. They will be 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.

Normal, Class IIIA laser pointers (not modulated) for testing and for use in the competition will be available for check-out at the ECE office throughout the competition. Modifications to the laser source are allowed. If you wish to modify your laser (e.g., to modulate the signal), you may purchase a suitable laser pointer (typically several dollars) out of your \$20 budget.

The truck and associated electronics must fit within a 16" x 16" x 16" 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, April 11th, 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 by Monday, April 9th. We will provide each team with a fresh set of batteries on competition day.

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.