

Welcome to the 2009 UWP Engineering Physics Altitude Challenge!

This letter details the rules and expectations, and answers some frequently asked questions.

Rules

1. **Start time at 11:00** It is OK if you will not be on campus at this time, or if you have another Expo commitment – just let us know at foustd@uwplatt.edu / 608-342-1696 to schedule a different time.
 - a. **New in 2009:** if you are unable to be on campus during Expo, you may instead **mail** us your entry – with detailed operating instructions – and we will operate it on the day of the contest.
2. Each team shall consist of three to five members except for the case when a school may have only one or two interested students. Multiple teams should be entered when six or more students are interested.
3. Design of the contraption should be original to the students with advisory help from the cooperating teacher.
4. Construction of the contraption should be by the students with advisory help from the cooperating teacher.
5. The battery must be the sole source of energy in the system, used only to power the motor.
 - a. I.e. no stored chemical energy, no solar cells, and no circuits shall be directly connected to the battery.
 - b. We will supply a fresh nine-volt battery at the competition.
 - c. If you buy items, please keep your budget under \$10. Salvage is OK.
 - d. **No prefabricated gear boxes are allowed.**
6. A one page design description and narrative, including budget, shall be submitted at the time of participation.
7. The EP Altitude Challenge Committee selects the winners according to the criteria given below in “Expectations.”
8. T-Shirt prizes will be awarded at the end of the competition. The awards of laboratory equipment (first prize, creativity prize) will be made in consultation with the winning school's representative at a later date.

Expectations

1. Build a system to elevate a supplied motor, and a nine-volt battery, by a height of **40** cm above their starting height.
2. Within the limits on the power source and budget (#5 above), any design is acceptable, any materials may be used.
 - a. **New in 2009:** You may choose to use the on/off switch included in the kit – or not!
3. The design with the fastest elevation time wins: \$125 to the school for laboratory equipment.
 - a. The EP Altitude Challenge Committee will decide ties on the basis of design creativity, robustness, and the quality and clarity of the one page narrative.
4. The EP Altitude Challenge Committee also decides the winner of the “creativity” prize (\$75 for lab equipment).
5. T-shirts to the teams with the top four times, and to the winners of the “creativity” prize.

Frequently Asked Questions (FAQ)

1. Can I launch my motor+battery with a rocket engine?
 - a. *Sorry, NO. The rocket engine uses chemical energy, which isn't allowed!*
2. My idea uses a large robot. Does the whole robot have to be raised by 40 cm?
 - a. *NO – only the motor+battery combination needs to be elevated, not the “superstructure.” Please, note that the robot could only be powered by the one motor that we provide!*
3. Does it have to “sit” at 40 cm? How about I launch it into the air?
 - a. *YES – it's OK to “fleetingly” reach 40 cm, as long as you meet the restriction on energy source.*
4. Could I use the motor to wind up a rubber band?
 - a. *YES – in this case, the source of energy is the motor+battery; the rubber band is just storing that energy.*
5. Does the motor+battery have to start on the floor?
 - a. *NO – they can start at any height; they just have to reach a point 40 cm higher than where they started.*
6. Can I bounce the motor+battery off of a trampoline?
 - a. *YES, BUT if it gets higher because you've thrown it downward, your arm acts as an external energy source, which isn't allowed.*
7. This is a timed challenge. When does the timer start – when I let go of my invention?
 - a. *The timer starts from the time the motor+battery start doing work. when you throw the switch, or let go (depending on how it operates) provided there is no stored energy from the motor+battery: no spinning wheels, no twisted rubber bands, etc. Otherwise, the timer starts.*
8. I'd like to use a ramp. Do I have to bring a ramp all the way from Iowa?
 - a. *No, we can provide a wooden ramp, if needed.*
9. I still have questions.
 - a. *Just shoot an email to foustd@uwplatt.edu, or call 608-342-1696.*