



# CROWDER COLLEGE

## Engineering Day 2021 Rubber Band Powered Vehicle

### **Goal:**

Design, build and test a rubber band powered vehicle, which will carry a load the greatest distance.

### **Rules/Judging:**

1. Each team will design and build a wheeled vehicle, powered by two rubber bands (size specified) which will transport a "load" (specified) the farthest distance on a smooth level surfaced floor such as concrete or VCT tile; and remain within boundaries of a three (3) foot (0.9144 meter) wide parallel track. Speed is not a criterion.
2. No vinyl LP records of any size or type may be used for wheels.
3. Up to two compact discs (CDs) may be used for wheels. Not limited to using compact discs.
4. As measured with the vehicle resting on the track, ready to run, the horizontal distance from the front-most axel to the rear-most axel shall not exceed 24" (61 cm)
5. The only propulsion energy source permitted is the elastic energy of two (2) rubber bands size 62 [1/4" wide x 2 1/2" long x 1/32" thick (0.635 cm x 6.35 cm x 0.0794 cm)].
6. Commercially assembled vehicles are not permitted; however, commercially manufactured components may be used as parts of the vehicle.
7. The "load" shall be one (1) soccer ball (international football) as defined by Federation Internationale de Football Association's (FIFA's) Law 2 for a match ready ball. This load is commonly referred to as a size 5 soccer ball.
8. Only official rubber bands (supplied by judges at the Challenge) can be used during the competition.

9. Rubber bands cannot be cut and must remain with the vehicle throughout the run (one end of the rubber band can be dragging from the vehicle at the end of the run).
10. The "load," supplied by judges at the Challenge, may be secured to the vehicle by means of guard rails, etc., but cannot be tied, strapped or taped to the vehicle. The "load" must be easily positioned and removed from the vehicle.
11. Propulsion of the vehicle must be through the wheels (i.e., no propellers, etc.). Transferring the energy of the rubber bands via gears, fly-wheels, etc., is encouraged.
12. No more than three team members per team.

### **Competition Information:**

- A. Up to three (3) runs will be permitted within a five minute time frame. Repairs and adjustments are permitted between runs. Five minute time period begins with start of first run. A run which is launched before the end of the five minute period will qualify, even though not completed until after the end of the five minute period.
- B. The vehicle must be self-starting (i.e., no pushing, external power starts, etc.). Contestants are permitted to hold vehicle on the starting line and simply "let go" or utilize a tripping mechanism.
- C. If, while a run is in progress, the event judge(s) notice a violation of the rules that would disqualify the run, the judge(s) shall inform the contestant(s) of the infraction and allow the run to be redone if the contestant(s) can correct the infraction. The disqualified run will not count against the contestant(s) three (3) run limit; however, the five minute time limit may still be enforced.
- D. Distance traveled after each run will be measured in feet/inches and recorded as follows:
  - i. from starting line to front of vehicle when it stops; or
  - ii. to the point vehicle strays outside the three foot wide track; or
  - iii. to the point vehicle drops the "load", rubber band(s), and/or any part(s) of the vehicle.
- E. In the event of multiple vehicles traveling the full length of the track, the winner shall be the vehicle that comes closest to hitting the center line mark at the end of the track. The entrant shall clearly identify the "center" of their vehicle by marking their vehicle with black ink in the presence of an event judge.