

Engineering Derby: Tool Ingenuity Competition Rules

Challenge Description

Teammates move a table tennis ball through an obstacle course using only the provided tools.

Materials

Each team receives an envelope filled with the same 12 tools.

Competition Rules

1. Only the 12 provided tools may be used. The tools may not be permanently modified.
2. The table tennis ball must be moved through the obstacle course with 6 challenges in the following order: lifting the ball from the floor to a 3-foot-tall table > moving the ball across a 3-foot-long table > carrying the ball across a 1-foot-wide gap to an inclined table > moving the ball along a 15°-inclined 3-foot-long table > moving the ball down a 5-foot-long ramp to the floor > pushing through a 3-foot-long tube. Note: Dimensions are approximate.
3. During the competition, only the active team is permitted in the obstacle course room.
4. The judge walks the participating group through the course, explaining each obstacle.
5. After handing out the tools, the judge starts a stopwatch. The competitors may test the use of the tools (not on the actual obstacle course or table tennis ball) for 1 minute before attempting the course. At this time, the team assigns obstacles to its members. Each competitor must have 1-2 tools. After the competitor receives his/her tools, s/he may not exchange them.
6. Prior to starting the course, the team must line up in order with its respective obstacle, with each competitor holding 1-2 tools. Each obstacle must be cleared by a single competitor. After starting, competitors may not switch tools with their teammates. Each competitor may only use his/her 1-2 tools.
7. If the table tennis ball falls off of the obstacle course, the current obstacle must be restarted.
8. If any competitor touches the ball with anything other than the provided tools, the current obstacle must be restarted and the team is given a 30-second penalty.
9. The judge stops timing when the ball clears the final obstacle. A 10-minute time limit is enforced. If the team has not completed the obstacle course by this time, a 30-second penalty is given for each uncompleted obstacle.
10. After its first trial, the team reconvenes for 15 minutes to discuss how to improve its course performance.
11. Then, each team re-runs the obstacle course a second time.
12. To conclude the competition, the team with the fastest time wins.

Scoring and Awards

Refer to the *Judging Rubric* to score each team's final obstacle course performance.

Awards are given for the shortest obstacle course time, including penalties.

To break a tie, **especially creative and effective tool use** is taken into consideration.