Alpine Bot Challenge Rules

Goal

Design, build, and program a robot that can climb a steep inclined plane, get onto the table top (flat surface) and place a flag down in the target zone. Completing the challenge before the time limit ends adds Bonus Points to your score.

Who Can Play

IF fewer than 5 teams are registered in any division, the Event director has the option to combine divisions. Teams will compete in two (divisions) for this challenge:

1) Elementary School (ES), and Middle School (MS),

2) High School (HS), and University/Professional (UP) divisions.

Requirements

Robot: Autonomous robot, any platform! $1,500 USD, and meets the following design constraints, which will be verified during Check-In: 1) No flying robots.

2) Multiple sensors and processors are allowed.

3) The volume of the robot must not exceed 65,030 cm3 in it's starting configuration.

General Rules

1) The Event Director will establish the number of official runs allowed, and the number of those official runs that will be counted for the aggregate score used to determine the Top 8 teams that will compete in the Tournament.

2) Refer to the scoring matrix below for point values for each portion of the challenge.

3) The robot has 2 minutes (120 seconds) to complete the challenge with the clock running backwards from 120 seconds.

4) Teams can practice as much as necessary, taking turns with other teams needing to practice.

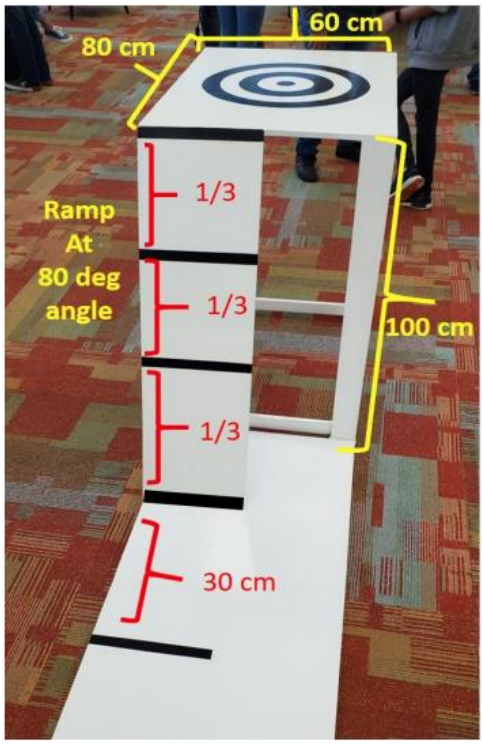
5) Should the track be needed to score an official run, practicing teams will yield the track.

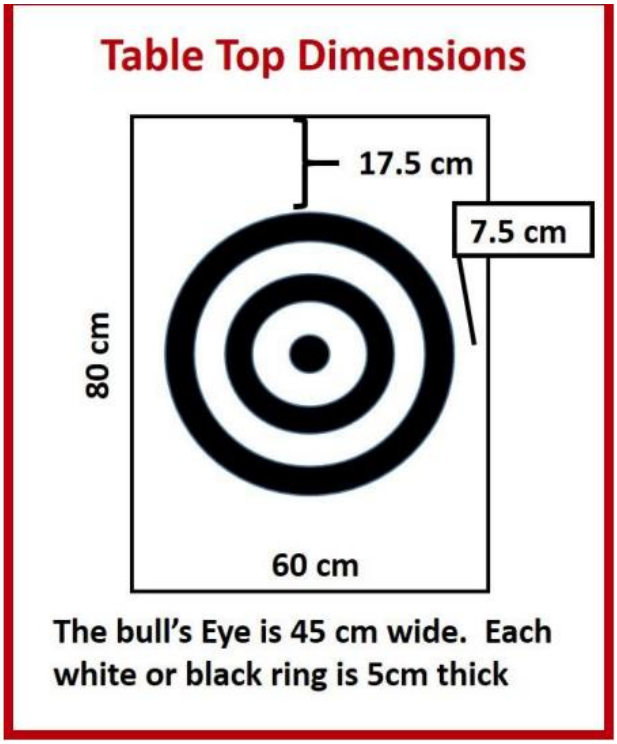
6) Once the tournament period has begun, practice is no longer allowed.

7) ES teams will start their robot in one of two positions: a) either on the floor in front of the ramp, or b) on the ramp at the bottom.

8) MS, HS, & UP divisions must start on the floor behind the start line 30 cm from the base of the ramp.

9) Touching the robot at any time requires it to be returned to the starting position (however, the clock will continue to run).





Challenge Specific Rules

1) A member of the team will indicate to the Challenge Monitor when to stop the clock after the run. (CAUTION: DO NOT TOUCH THE ROBOT UNTIL THE MONITOR INSTRUCTS YOU TO DO SO OR YOU COULD END UP FORFEITING YOUR FLAG POINTS AND YOUR TIME BONUS)

2) Event Directors are free to use locally available materials in the construction of challenge tracks but should make an effort to match as closely as possible to the US standard.

3) The table top is 60 cm x 80 cm and will be constructed of particle board.

4) The table top surface will be 1 m above the floor surface.

5) The ramp is constructed of particle board and has a smooth flat surface.

6) ES Div: The robot may start either on the floor, or on the beginning portion of the ramp.

7) MS, HS, & UP Div: The robot starts behind the line 30cm from the base of the ramp.

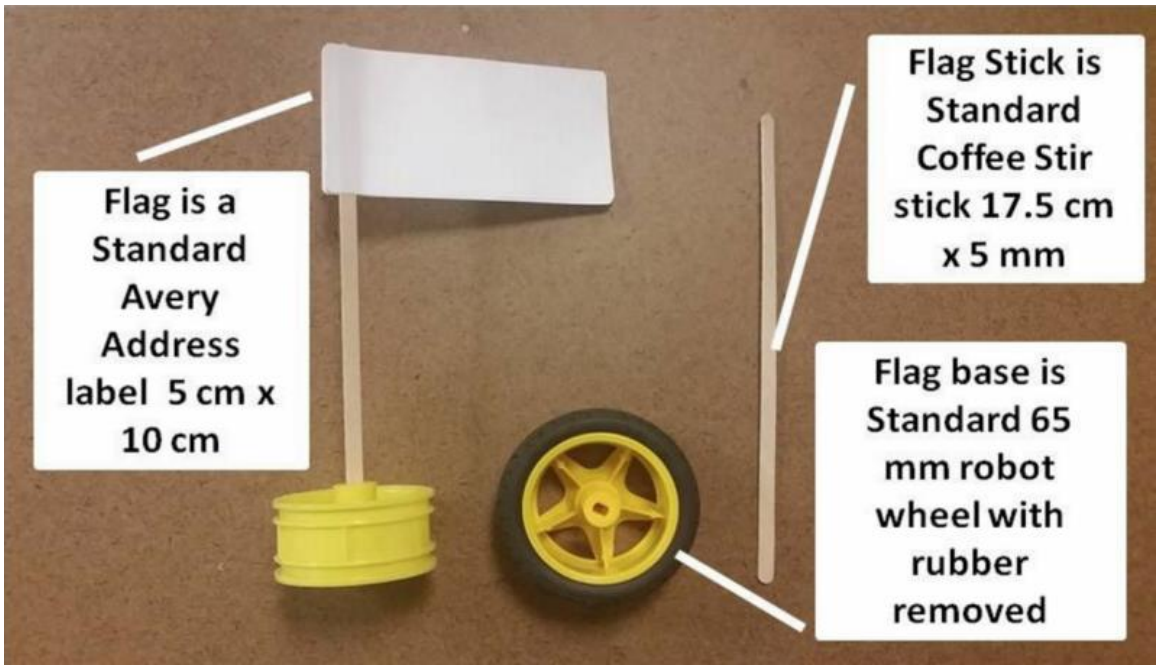
8) There will be four (2 mm wide) black lines drawn perpendicularly on the ramp at the beginning, one third of the way up, two thirds of the way up, and at the top of the ramp.

9) There is a bulls eye centered on the table top consisting of a 10 cm diameter black circle at the center of the table top.

Track: All Challenge Dimensions are approximate.

Flag Details

1) There is a small flag with a round base with a 50 mm diameter that will be provided at the challenge (see diagram below).



Scoring

1) Each completed section of the ramp is worth points.

2) A section is considered complete when the front driving wheels pass over the start of the scoring zone line.

3) If your robot is completely on top of the table it earns 100 pts. (the robot must have all its supporting components (Wheels, tracks, skids, etc) on the table to be considered complete.

4) The center of the flag (the flagpole) determines which scoring zone the flag is in. If any part of the robot is touching the flag (Flagstand, flagpole, or flag) then a penalty of 50% of the flag points will be accessed.

5) If the robot successfully plants the flag (the flag must be standing upright on its base) a time bonus equal to 1 pt for every remaining second will be added to the overall score.

Scoring Matrix: Maximum points to the top is 300 points + points for placing flag on top of the table (200)

Ramp	Start	Base	1/3 up Ramp	2/3 up Ramp	3/3 up Ramp, @ tabletop edge	Total to the edge
ES	0/25	*NA*	50	75	100	250
MS, HS, UP	0/20	40	60	80	100	300
Tabletop & Flag points	on top of table	Flag in Bullseye	Flag in Inner White	Flag in Inner Black	Flag in Outer White	Flag in Outer Black
ES	100	100*	80*	60*	40*	20*
MS, HS, UP	100	100*	80*	60*	40*	20*

*50% penalty if any part of flag-pole or flag-base are touching the robot

Tournament Scoring:

Currently there is NO tournament for the Alpinebot Challenge