



2019 AlpineBot Challenge

Goal

To design, build, and program a robot that can climb an inclined plane set at **80 degrees** from horizontal to a table top (flat surface) and place a flag down in the target zone. The faster you can complete these tasks increases your overall score.

Who Can Play

Teams in this challenge compete in **separate divisions**, typically:

- Elementary School
- Middle School
- High School + Big Kids

Required Materials

Autonomous robot, any platform, costing \$1,500 USD or less, and meets the following design constraints, which will be **verified during Check-In**:

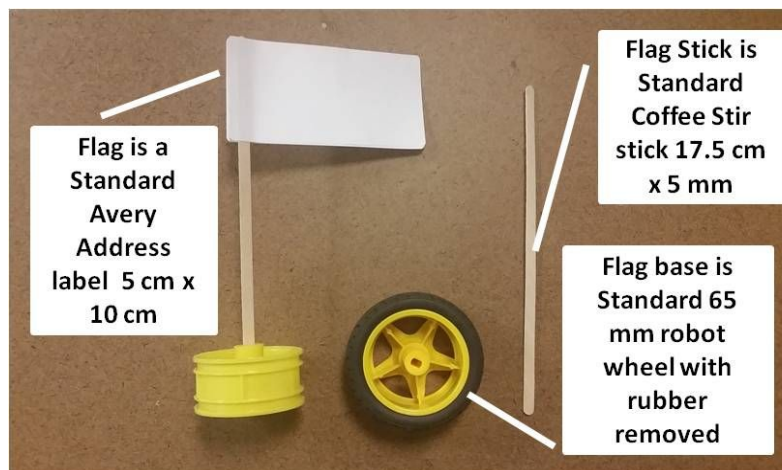
- **No** flying robots.
- Multiple sensors and processors are allowed.
- Volume of the robot must **not** exceed $65030cm^3$.

General Rules of Play

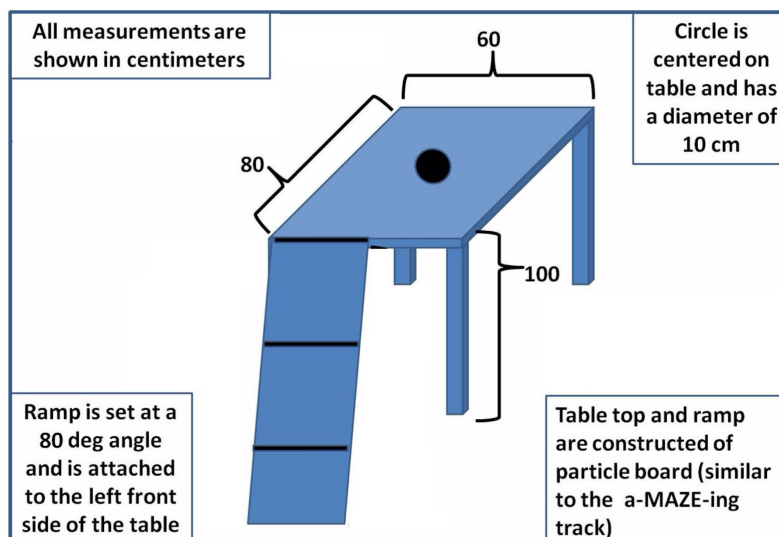
- The robot has 1 minute to complete the task.
- Only players can operate and manipulate the robot during the 1 minute heat.
- Touching the robot at any time requires it to be picked up and returned to the starting position.
- During the scoring period, simply go to any open track to compete.
- Official tracks will be available to practice on when not in use by competitors attempting an official run.
- Teams will only get 10 official scoring runs during the scoring period (your 5 highest scored runs determines your final score).

Challenge Specifications

- The table top is *60cm x 80cm* and will be constructed from particle board.
- The table top surface will be *1m* above the floor surface.
- The *1.2m* long x *30cm* wide x *2.5cm* thick incline plane may be **one or a combination of** any of the following materials:
 - o Whiteboard material
 - o Particle board
 - o Indoor/outdoor carpet
 - o **Surprise** material (**Not** known to the public until you arrive!)
- The incline plane will be mounted to the side of the table top.
- The robot must **start on the floor**, in front of the ramp.
- There will be three *2mm* wide black lines drawn perpendicular to the ramp's length equidistant from each other located at every third.
- There is a *10cm* diameter black circle at the center of the table top.
- There is a small flag with a round base with a *50mm* diameter that will be provided at the challenge (see diagram below).



- Ramp will be at an **80 degree slope**.



All Challenge Dimensions are Approximate

Scoring

The overall score is a combination of following points earned during an attempt:

- Front wheels touch one of the three lines along the incline plane.
- Getting the **entire robot** on top of the table.
- Stand the flag, supported by only the flag's base as provided by the event, **anywhere on the table** for points plus any remaining time bonus.
- Time bonus (integer value of 60 seconds) will be added to your score, **if and only if**, the flag is standing upright anywhere on top of table. The unsupported flag must remain upright to be scored as **"placed on top of the mountain"**

See the AlpineBot Challenge scoring matrix below for details on the scores assigned during your attempt.

Scoring Matrix

Point Reached				Total
First Line	Second Line	Third Line	Table Top	
25	75	100	100	500
Flag Placement on Circle (pick one)				
Not Upright	Outside	Touching	Fully Inside	
0	25	50	200	1 - 60
Time Bonus: Clock counts down from 60 seconds and stops when the robot releases the flag on top the table and remains upright. Clock stops and remaining seconds are added for Total Possible Score.				