

Jousting Challenge

This challenge concludes in a single elimination tournament - Top 8 teams from each division, based on performance from Friday and Saturday scores, will compete for awards to 1st, 2nd, and 3rd places on Saturday, May 6th.

Goal

To design, build, and program a line following robot that can carry a knight (lightly held by magnets to a steel plate) that will knock off your opponent's knight by using its lance only.

Who Can Play

Teams of 2 to 4 players in separate divisions for:

- Elementary School
- Middle School

Required Materials

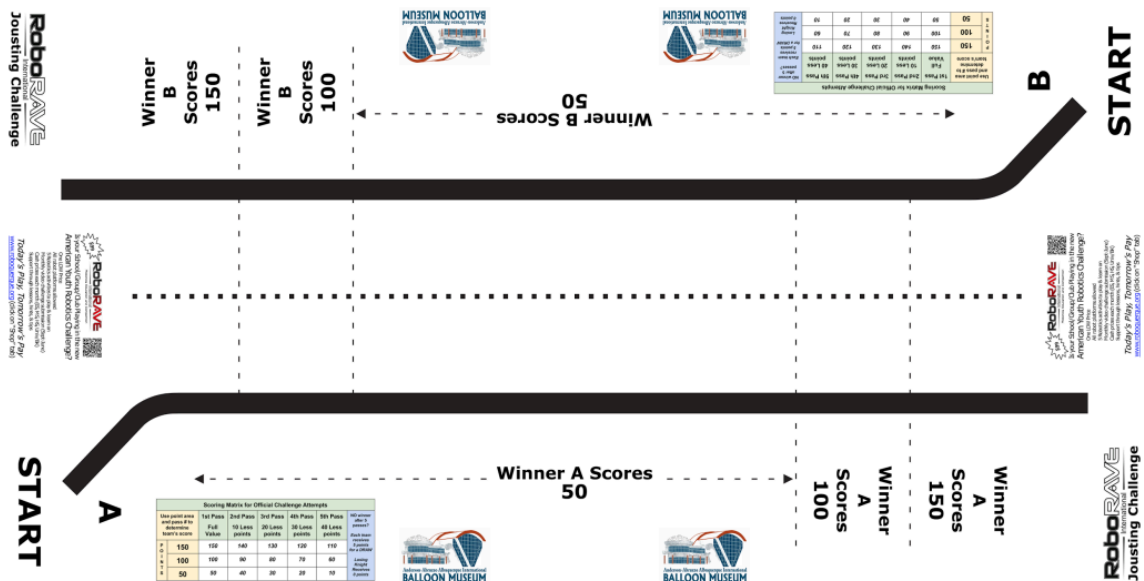
Autonomous robot, any platform, costing \$1,500 USD or less, and meets the following design constraints, which will be verified during Check-In on May 4th or 5th, 2017:

- Robot can demonstrate it is running a line following program by negotiating the jousting track from the start point and around the curve up to the 100 point line.
- Knights connecting structure (canning jar lid) can be attached using whatever material is practical, method of attachment cannot provide any support to the knight, and cannot provide any additional magnetic gripping force to aid the knight in staying attached to the structure. knight is 21cm high and the diameter 6.5 cm .
- Knight's connecting structure is no more than 10 cm in front of the robot, and no more than 10 cm above the track.

- Knight's body is completely unsupported, either by added structure or robot above the metal plate.
- Knight is attached to the metal plate using only three ~2 cm round "button" magnets.
- A line following sensor(s) and programming guiding the robot is required.
- During practice, any of the official 2013 (red or green), 2014 (yellow), 2015 (blue), or 2016 (white) Jousting Knights are allowed. However, during qualifying or tournament competition you must use the official 2017 Jousting Knight (will be provided at the track for both teams).
- Volume of the robot must not exceed 65030 cubic cm. Click Here for the Video!

Challenge Specifications

- Two (2) parallel, ~2.5 cm wide black lines on a white PVC vinyl track.
- Each line has a slight curve at the start.



- A meter stick will be inserted under the track the length of the midline to create a "wall".

- Three scoring zones: 150 points (0.0 cm to ~15 cm from start); 100 points (~15 cm to ~30 cm from start); 50 points (~30 cm to ~91 cm from start).

General Rules of Play

- Elementary and middle school teams play in separate divisions.
- A line following program must control your robot's motion.
- During the scoring period there is no seeding, simply go to any track to find an opponent.
- Run as many jousts as you are ready for during the scoring period (Elementary and Middle School jousting teams need 5 reported scores).
- Only the lance can knock the knight off; if the knight is knocked off something other than the lance, then repeat the joust, unless that was your 10th attempt.
- During a jousting match, up to 5 attempts will be allowed to knock your opponent's knight off.
- If five (5) passes are used and no knight is knocked off, the joust will be considered a DRAW. Both teams relinquish the track to the teams waiting to joust.
- If both knights fall, the LAST knight to hit the floor, as determined by the track official, will be awarded the win.
- ONLY the lance may cross the midline of the track (~13 cm from either of the 2 parallel lines).

Scoring Period

- Friday, May 5th, 8:00AM to 5:00PM.
- Saturday, May 6th, 8:00AM to NOON.
- Teams are strongly recommended to begin scoring their robots on Friday to insure they will get the minimum 5 scored runs in by NOON on Saturday.

Scoring

- Full score is awarded ONLY if you knock your opponent off during the 1st of 5 attempts. Each successive attempt used decreases the point value. See matrix below.
- Higher scores are earned by knocking your opponent off closer to their START position.
- If the knight (not the lance) is lying within two point areas, the higher point value is awarded.

Scoring Matrix

<p align="center">IF a knight is knocked off, IF and ONLY IF, by the opponent's lance, THEN, circle the winner's score</p> <p>Definition: Pass - an attempt is made by both robots to knock each other off, but NO ONE does</p> <p>Each team has 5 Passes to knock their opponent OFF.</p>							
Points per pass	1st Pass	2nd Pass	3rd Pass	4th Pass	5th Pass	<p align="center">5 passes, no winner?</p> <p align="center"><i>Draw - each team gets 5 points</i></p>	
P	150	150	140	130	120		110
O	100	100	90	80	70		60
I	50	50	40	30	20		10
N							
T							
S							

Tournament Scoring

- The top eight teams from each division will compete in the final tournament.
- Advancing teams will be seeded into the tournament bracket according to their aggregate score (see bracket below).

RoboRAVE International 8 team Tournament Bracket

Tournament Placing

The losing teams from Round 1 will place 5th through 8th in accordance with their aggregate score coming into the tournament.

The losing teams from Round 2 will face each other in Round 3 to determine the 3rd and 4th place winners respectively.

The winning teams from Round 2 will face each other in the Championship Round (which may be run at the same time as round 3) to determine the 2nd place winner, and the Tournament Champion.

