



Herff College of Engineering

Herff College of Engineering EDAY 2019

KICKER

Grades 9-12

The competition is designed to test the ingenuity of the team to design an 'artificial leg' to kick a standard ping-pong ball into a target.

Rules

The artificial leg must be mechanical in nature and must not receive any propulsive power from any non-mechanical source.

The artificial leg must contain the following:

- a thigh (femur)
- a shin (tibia)
- a foot
- and all three components must be able to rotate or be adjusted to simulate motion from the hip, knee, and ankle joints.

The musculoskeletal equivalents (major bones,

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major muscles, major ligaments/tendons) for the artificial leg must be indicated.

The artificial leg must be able to kick the ping-pong ball towards a target.

The artificial leg must fit within a box that is 2.0 feet in each dimension. It may be smaller than the box but it may not be larger.

The artificial leg must fit into the box when it is at its fullest extension in all dimensions.

The ping-pong balls may not be altered in any way.

The artificial leg will be placed on a level surface. The operator of the leg may hold the device on the surface during operation.

The artificial leg will be used to kick ping-pong balls from a distance of 4, 6 and 8 feet to a target that is 3 feet above the level surface. The target will be 2 feet in diameter. The target will be divided into three concentric zones, with the



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'bulls-eye' being 0.5 ft diameter, middle zone 0.5-1.0 ft and the outer zone, 1.0-2.0 ft.

Each artificial leg design will be allowed three attempts from each distance to hit the target.

No modification of the device may be made (other than re- setting components) once the first kick has been made.

Scoring

1. Each successful kick into the target from a distance of 4 feet will be awarded 6 points, with 2 additional points for hitting the middle zone and 4 additional points for hitting the bulls-eye.

2. Each successful kick into the target from a distance of 6 feet will be awarded 4 points, with 2 additional points for hitting the middle zone and 4 additional points for hitting the bulls-eye.

3. Each successful kick into the target from a distance of 8 feet will be awarded 3 points with 2 additional points for hitting the middle zone and 4

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additional points for hitting the bulls-eye.

Points also will be awarded for creativity of design concept and demonstrated knowledge of components and musculoskeletal equivalents.

Please send any questions about the competition to:

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