

**13th Annual
MCC High School Engineering Competition
Monroe Community College
Thursday, April 29th, 2010**

Event: SumoBots

Objective: To design an electric powered SumoBot with the force to push an opponent's SumoBot off a round table having a 7-foot diameter.

Vehicle Specifications:

Maximum

Size: The SumoBot must fit on a standard 8.5" X 11" sheet of paper without any part of the SumoBot hanging over any edges of the paper. There is no height limit. **The SumoBot must remain in this size constraint for the entire match.**

Maximum

Mass: 1.500 Kilograms for the SumoBot. The control box and wires that will be held by the students, and the power source that will be located outside the ring, will not be included in determining the mass of your SumoBot.

Components: Teams may use commercially supplied components but teams must show that they designed and fabricated a majority of the SumoBot including the chassis, body and transmission. Use of a commercially purchased robot or kit is prohibited. Teams may not compete with a SumoBot that was used in a previous competition at MCC.

Motors: Teams may use any number of Radio Shack #273-255 12V DC or Jameco 232039 12V DC motors. No other motors may be used. The specifications for the Jameco motor can be found at:

<http://www.jameco.com/webapp/wcs/stores/servlet/ProductDisplay?langId=-1&storeId=10001&catalogId=10001&productId=232039>

Teams should note that if their SumoBot causes the fuse of the power supply to blow during a match, they will be the loser for that match.

Energy

Source: Each SumoBot will be supplied with energy by its own 11 VDC power source. MCC will supply each school with two power supplies for use during the school year and at the competition. Schools must bring their power supplies to the competition. **Only 1A fuses should be used in these power supplies.**

Control: RC controls are prohibited. The electronic control boxes must be designed and fabricated by the students. The SumoBot must be controlled by electrical current that is sent from the control box to the SumoBot via a wire tether. The control box may be opened at check-in so that the judges can inspect it. The control box must provide the SumoBot with sufficient maneuverability to provide a credible threat to the opponent's SumoBot. **Each SumoBot must have its own control box hard-wired to the SumoBot.** Teams may not share control boxes. The control boxes must have banana or alligator clips for quick connection to the banana receptacles of the power source.

Testing Surface: The SumoBots will battle on a 7' diameter round table consisting of a painted plywood surface. The surface will be neither perfectly smooth nor perfectly level.

Time for Bouts: In the winner's bracket, each match will pit two SumoBots against each other for two minutes in an attempt to knock the opponent off the table. The winner is the SumoBot remaining on the table last. If both SumoBots remain on the table after 2 minutes then a 30 second overtime period will be added. The winner in overtime will be the SumoBot closest to the center of the table at the end of the overtime period. In the loser's bracket, matches will be 1 minute long with a 30-second overtime period.

Tournament

Format: The competition will begin with four "regional" tournaments that will be double elimination. The winner of each "regional" will go to the final four round that will consist of two semi-final matches, a consolation match for 3rd and 4th places, and a championship match for 1st and 2nd places.

Rules:

1. Each school may enter a maximum of 4 SumoBots in this event. The teacher must either call or email Sue O'Brien at 292-2001 or sobrien@monroecc.edu by **Tuesday, May 5, 2009** to tell her how many SumoBots they will enter. The teacher must bring a completed registration form to the competition for each SumoBot entered.
2. SumoBots may not shoot projectiles or missiles of any kind. All parts of your SumoBot must be securely fastened so that the danger of flying parts is minimized.
3. Chemical or flammable agents are not allowed. Adhesives may not be applied to the tires.
4. SumoBots may not contain any sharp points or edges. All metal corners must be rounded or covered with protective material. The SumoBot may not cause damage to the table or clamp onto the edge of the table.
5. No Pinch points or exposed drive mechanisms may be present. The SumoBot may not have components that have the potential to pinch or crush fingers, skin, or other body parts. Drive mechanisms must be covered so that your SumoBot can be safely touched from any orientation while it is operating.
6. Exposed rotating components such as chain, wire, blades or rigid bodies are prohibited. The SumoBot itself may spin as long as the judges rule that this does not present a hazard.
7. Electrical components that present a shock hazard are not allowed.
8. Each SumoBot must be controlled with a two-person team. One member works the control box and the second person keeps the wire tether out of the way.

9. The tether must always have slack in it. All tethers must be at least 10' long when measured from the car to the control box. The SumoBot may not be pulled or kept from being pushed by pulling on the tether. The tether may not be used as a weapon to strangle the opponent's vehicle. A SumoBot may not damage their opponent's tether. The tether should be kept behind the vehicle as much as possible. The judge will stop the clock and untangle the tethers if they interfere with the SumoBots.
10. A SumoBot that is unable to move along the table will be deemed the loser of the match. For example, blowing the fuse on the power supply will cause a team to lose the match.
11. SumoBots and control boxes may not contain any sources of stored energy such as springs, batteries, capacitors, or chemicals. Springs may be used as long as they are not compressed, stretched or wound at the beginning of the match.
12. SumoBots must be ready to compete within one (1) minute of being called by the judge. A SumoBot that is not ready within one minute will forfeit the match.
13. A SumoBot that presents a hazard to the participants and/or spectators will not be allowed to compete. Any vehicle that will damage the table will also be disqualified.
14. Each entry from a given school must represent a distinctly different design. Cosmetic differences do not constitute different designs. If a school has multiple entries without distinct differences, only the best finisher with a given design will be counted in the final results.
15. Entries from previous years are strictly prohibited.

Copies of these rules are available at www.monroecc.edu/depts/eng&phy/highschl.htm .

For questions contact John Wadach at 292-2488 or jwadach@monroecc.edu .