Robotic Arm Competition Skill Areas

- **Longest Reach**—Robot arm will pick up an object from the west square and set the object down as far away as possible in front of the robot. If the object or the robot arm is tipped over, the team will be disqualified for this event. Teams will be given two opportunities to place the object. Points will be earned for the first, second, and third place teams in this event.

- **Speed**—Robot arm will be judged on how fast the arm can successfully pick up 5 pencils and place them in the northeast box. A pencil that is knocked out of the playing area will be returned to its starting position and a 20 second penalty will be accessed. Tipping over the box will result in a 30 second penalty being accessed. Points will be earned for the first, second, and third place teams in this event.

- **Accuracy**—Robot arm will pick up a one inch square block and place it on the bulls-eye target. Points will be given for a bulls-eye only if the block is NOT touching any part of the outline for the bulls-eye. Placing the block out side of the bulls-eye will be worth fewer points. The blocks that are further from the bulls-eye will be given less points. Points will not be given for the area if the block is touching that area's line at any position. All teams may earn points in this event.

- **Functionality**—The robot arm will lift a PVC pipe that is placed on its end, invert the pipe, and set it back down without knocking the pipe over. This process will be repeated with three PVC pipes. Points will be earned for the number of pipes inverted and stood on its end successfully at the end of the competition. Knocking over a pipe during the competition will result in the points being lost for the knocked over pipes. All teams may earn points in this event.

- **Strength**—The robot arm will lift up three objects each differently weighted. The objects will be lifted to an elevation of 5 inches, held in place for five seconds and returned to its starting position. Points will be given for each object that is successfully maneuvered. Tipping the robot arm will result in no points earned at this weight. All teams may earn points in this event.

- **Course Skills**—Teams will earn points by relocating items from the competition area to designated positions on the playing surface. Teams will be given 2 minutes to compete. Points will be delegated as follows:
  - Items placed completely in north zone – 1 point for each item
  - Items set in east or west goal – 5 points for each item
  - Items set in north goal – 7 points for each item
  - Items set in either bonus goal – 10 points for each item
Rules for Robotic Arm Competition

Team Event: 2 students per team

- Robot arm should fit inside a 30.0cm x 30.0cm x 100.0cm high space.
- Robot arm is held in place only by the force of gravity.
- All power to control all motors and actuators must come from electrical sources. The source shall be contained in the robot base or in a control box, not directly attached to the robot arm.
- The expected voltage output across any points in a battery circuit or power supply (including the overall voltage) shall not exceed 14.4 volts as calculated using the labeled voltage.
- The robot arm must be capable of moving objects in order to score points. See competition categories for further information.
- No “fixes” will be allowed during the competition. Any adjustments must be completed prior to your turn in each competition category.
- First, Second and Third place winners will be awarded.

Event Capacity: 10 Teams of 2 Student = Total 20 Students