

## **Miniature Golf Course** (robotic)

**Lesson Overview:** Each group of students designs a miniature golf obstacle so that when they are put in a series, they have created a miniature golf course. Although the mechanisms will be robotic, students can use other types of materials for the obstacle. You can stipulate if you want students to include gears and sensors.

**Suggested Time:** 140-180 minutes

### **Learning Objectives:**

- To coordinate building and programming a robot
- To gain experience building a system
- To collaborate to build a system

### **Materials:**

- Scissors
- Golf balls
- Golf club, putter
- Paper cup or something else as the hole
- Interlocking building bricks
- Cardboard
- Paper
- Tape
- Paperclips
- String
- binder clips
- pipe cleaners
- popsicle sticks
- Paper cups

### **Directions:**

1. Talk about and show pictures of mini golf obstacles. Discuss which kinds of obstacles are feasible to build using the robotics materials in the classroom. This conversation can include methods of movement for the obstacles (swinging, spinning, etc.)
2. Have students coordinate the order of the obstacles so each group knows when their obstacle will fall in the order.
3. Give students time to plan their obstacle.
4. Check students' plans before they begin to build.
5. Students build their mini golf obstacles.

### **Optional:**

The students can program their obstacle to play a victory noise when the ball gets to the hole, or something totally different.

- Students can build putters.
- Students can add a theme for each hole and add decorations based on that theme.