

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_

## Arduino Design Challenge #1 Overview Handout

**Objective:** To design a functioning system using an Arduino using at least three actuators.

**Details**

- You will work in teams on this challenge, but the final product is completed individually.
- You must use at least one new electrical component: Piezo speaker (buzzer) or DC motor.
- You must make a sketch your physical setup and show it to the teacher. Once approved, you get the materials you need.
- For homework, you (individually) will need to comment your program, explaining what each line of code does. Keep this in mind while designing and building.

**Final Product: Manual/Guide**

A student from another class walked into the room during your presentation and is blown away by your design! He asks you for instructions as to how he can build it on his own. Create a manual for him that includes the following documents:

1. a one-paragraph description of your system (how it functions and its purpose)
2. the program with comments explaining what each block of code does; for the purpose of this assignment, consider “blocks of code” to be no bigger than 4 lines
3. a detailed diagram of the hardware, including labels, clearly showing how all components are connected

*Deadline:* The manual must be submitted for grading the day after tomorrow.

*Note:* This is an individual assignment, NOT a partner assignment! That means each person in your team must submit his/her own documents.

### Example Rubric for Arduino Design Challenge #1

Student name:	Arduino Design Challenge #1		
	Presentation	Program (code)	Sketch (hardware)
Does the student demonstrate understanding of...			
1. <b>Arduino functions</b> , including: pinMode(), digitalWrite(), analogWrite(), and delay()?			
2. <b>Actuators</b> , including how to connect them to an Arduino appropriately?			
<b>Sub Totals</b>			
<b>TOTAL</b>			

*Rating scale:* 0 = no understanding, 1 = some understanding, 2 = proficient