Introduction to Engineering Design with Professional Development 1 – Team Project Demonstration Rubric

**TEAM __Evolution Industries____ DATE _____ INSTRUCTORS _____**

**PROJECT _____Skybox_____**

**FUNCTIONAL CRITERIA**

| Team Member (Name) | Key Function / Feature Metric | How It Will Be Demonstrated | Target Specification | Score 4-0 |
|---|---|---|---|---|
| 1. Erin | Drawers fit inside each other and inside main frame and can hold weight of items | 1. The group will add a five pound ream of paper to the drawer<br>2. After the end of the demo, the box will be checked for any bending or breaking | Drawer must hold a maximum of 5 pounds | |
| 2. Shuxian | Main Frame is able to firmly hold weight of motors, drawers, and weight of items added | 1. After drawer has been checked, the drawer with the weight will be pushed into the main frame<br>2. After the end of the demo, the frame will be checked for any breaking or bending | Frame must support a maximum of 5 pounds over the weight of the Skybox | |
| 3. Tim | All motors and servos are able to be powered on | 1. Skybox will be plugged into wall<br>2. LEDs on the Skybox will flash to indicate that it is being powered<br>3. Group will use multimeter to ensure that correct voltage is going to the various components | 12 volts go to the motors and 9 volts to the Arduino | |
| 4. Swetha | When code is entered, motors and servos respond | 1. The box will be reset with the drawers in the frame and the system is already powered<br>2. An incorrect code will be entered in the keypad to show that the program does not start<br>3. The correct code will be entered and the motors and servos will respond as per the program | Four motors on the outer drawer should work.<br>The servo should work to push out the drawer.<br>Nothing moves when the wrong code is entered. | |
| 5. Leo | Drawer is able to move horizontally desired distance | 1. When the motor is triggered, the servo will move, and the box will be pushed out along the rail<br>2. If the servo does not start, a program that runs only the servo will be used | Box must move between 9.0 and 10.5 inches in less than one minute | |
| 6. Joyce | Drawer is able to be lowered vertically desired distance | 1. After the outer box has been moved out completely, the box will be lowered the desired distance<br>3. If the motor does not start, a program that runs only the motors will be used | Box must move to desired height (between 10 and 19 inches) within 1 inch within one minute | |

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| Team Member (Name) | Key Function / Feature Metric | How It Will Be Demonstrated | Target Specification | Score 4-0 |
|---|---|---|---|---|
| 7. Paul | Wall Brackets are able to hold Skybox, components and double the weight of items without shaking or moving | 1. The drawers will be pushed back into the Skybox<br>2. After end of demo the system will be checked for any bending, breaking, or shifting on the wall | Must be able to hold 5 pounds over the Skybox's weight | |
| | | | **Average** | |
| **Instructions:**<br>Each team member must demonstrate one key feature for their subsystem. They must define how they will make that demonstration and identify the target value for that metric. | **Scoring:**<br>4 = fully functioned and meets all of the spec<br>3 = functioned and nearly meets the spec<br>2 = mostly functioned and mostly meets the spec<br>1 = partially functioned and / or barely meets the spec<br>0 = did not work and/or did not meet the spec | | | X 10 |
| | | | **Upper Score** | |
| | | | | |

**ADDITIONAL CRITERIA**

| | Excellent | Good | Satisfactory | Poor | Unsatisfactory |
|---|---|---|---|---|---|
| **Creativity** | Shows innovative use of technology<br>**(12)** | Some innovative use of technology<br>**(11)** | Innovations mentioned but not clearly visible<br>**(9)** | Innovations unclear, not mentioned<br>**(8)** | Simply a copy of existing technology<br>**(7)** |
| **Aesthetics** | Project shows excellent durable workmanship<br>**(12)** | Project shows some attention to durable workmanship<br>**(11)** | Project is assembled, components attached<br>**(9)** | Loose / poorly attached components, wiring disorderly<br>**(8)** | Project shows little or no attempts at workmanship<br>**(7)** |
| **Intuitive / Ease of use** | Project self-communicates design intent, user manual not required<br>**(12)** | Project can be operated with little guidance / training<br>**(11)** | Project can be operated with guidance / training<br>**(9)** | Project operation requires detailed explanation or training<br>**(8)** | Project operation is unclear even with explanation<br>**(7)** |
| **Safety** | Safety features visible and demonstrated<br>**(12)** | Safety features visible or demonstrated **(11)** | Features mentioned but not demonstrated **(9)** | Features not mentioned<br>**(8)** | No safety features visible or demonstrated **(7)** |
| **Robustness** | Project works every time it's operated without any adjustments<br>**(12)** | Project works multiple times with little or no adjustment<br>**(11)** | Project works multiple times but requires some attention / adjustment **(9)** | Project works once but operation cannot be repeated<br>**(8)** | Project does not work at all<br>**(7)** |