Mechanical

Day 1

1. Presentation of challenge (10 minutes; try to be through. Extra time supplements strategic design)
2. Strategic design* (25 minutes, 0 minutes extra time to use on this of prototyping)
    a. Go around and check on each group during this time to see their ideas, make positive comments, and point them in a good direction if they ask. Make multiple designs.
3. Prototyping/iteration* (20 minutes)
    a. Prototype and test the multiple designs. Make more designs if time allows. Test all avenues of possibility in time allotted.

Day 2

1. Prototyping/iteration* (20 minutes)
    a. More time for same thing because this portion is the important bit.
2. Final Design* (10 minutes)
    a. Draw out the design to refer to when going to safety to build
3. Engineering Review (20 minutes)
    a. Present design ideas and answer questions from teachers and peers
    b. Buffer time if no one finishes designing in allotted time.

*Define each step and explain importance of each step. Then give them their time limit and general explanation of what to do

Note: Time limits may change.

Materials

- Cardboard
    - I'll go dumpster diving -Vincent
- Tape
    - Whatever's available
- Scrap paper (for sketching)

Safety

Day 1:

30-35 minutes on slides on the following topics from the safety manual:

- Responsibilities
- General Safety Requirements
- Safety Procedures
    - Reporting Incidents and Accidents
    - First-Aid Protocol
    - Soldering
    - Tool Safety
- Pit Safety

25-30 minutes:

- Tour of 30
- Teaching how to use the following tools:
    - band saw
    - Drill press
    - Chopsaw

Day 2:

Time to work on project, which will have been planned and designed during mechanical class

Collaborative Project

3 groups per class?

Design requirements:

- Materials limit
    - 8” x 8” polycarb per group
    - L stock limited to use on edges
- Make sure enclosure survives with balls inside
    - Scoring like the SAT
        - 1 point for every ball that stays in the structure
        - -¼ point for every ball that leaves the structure
    - Competition
- Leave 1 face open, and seal with tape (just to hold balls in) or put balls in before attaching last face?

Procedure

- Design in mechanical class
- Build in safety class
- Test sometime after. If not possible, another time will be arranged
- Test structures
    - Select number of balls to place within structure

    - Drop each unit from a set height in the stairwell onto a piece of cardboard
    - Score according to aforementioned scoring details

Materials

- 1152 sq. inches of ⅛” polycarb
- L stock
    - https://www.mcmaster.com/#8982k39/=195lfw6
- FTC nuts and bolts
- Cardboard to protect floor
- Cascade effect balls
- Tape (limited use)