

### ***Key Requirements:***

- Design a new mechanical or electro-mechanical consumer product
- The product should have moving parts (i.e. a mechanism).
- The product should have stemmed from the Human Centered Design activity utilized in Labs 1-3
- Design for annual sales worldwide of at least 1 million per year with a product life of at least 5 years.
- The product should be designed predominantly utilizing sheet metal stampings and plastic molded parts; and thus should have investments in hard tooling utilizing injection molds and progressive dies. Other off-the-shelf components such as fasteners, springs, and motors, and other processes such as stock machining or bar & tube may be incorporated as necessary.
- The product should be your own design and should have something new or different about it; innovation will be a portion of the grade. Your product does not have to define a new problem; it may provide a novel and/or economic solution to an existing problem.

### ***Project Deliverables:***

You will be graded on the following key deliverables:

1. Product Description – ideation process and how you got there (brief)
2. Concept Sketches – initial and finalized
3. Concept Selection Process (Pugh Matrix)
4. Product Design Specification (PDS)
5. CAD Models – Part and Assembly Models
6. **Assembly** Drawing with Cross-Sections
7. Exploded **Assembly** Drawing with Bill of Material (BOM)
8. Detailed Engineering **Part** Drawings fully dimensioned with tolerances
9. Tolerance Analysis
10. Materials and Manufacturability, including aPiori cost analysis