Design Project 1:

The object of our first design project was to design a mug to be used by disabled individuals who have missing fingers on their hands.

To design a cost effective mug that was easy to use we utilized the engineering design process.

Design Process:

1. Analyze customer needs
2. Analyze current market offerings through the use of patent searches
3. Revise design statement
4. Generate concepts in our group
5. Utilize the concept compatibility chart and analytical hierarchy process (AHP) to select concepts
6. Design prototype with clay and 3D modeling software

AHP TABLE:
Customer Needs Hierarchy:

1. Portable (0.207)
   1.1 Lightweight (0.107, 0.517)
   1.2 Fits in Cupholder (0.0286, 0.138)
   1.3 Lid/no Spill (0.0571, 0.276)
   1.4 Holds 16 oz. (0.0143, 0.0690)

2. User Friendly (0.310)
   2.1 Safe (0.0558, 0.180)
   2.2 Easy to wash (0.0418, 0.135)
   2.3 Small ecological footprint (0.00697, 0.0225)
   2.4 Comfortable (0.0523, 0.169)
   2.5 Can be held by disabled individual (0.0628, 0.202)
   2.6 Grip texture (0.0418, 0.135)
   2.7 Aerator (0.0209, 0.0674)
   2.8 Simplistic use of lid (0.0279, 0.0899)

3. Durable (0.241)
   3.1 Withstands dropping (0.0142, 0.0588)
   3.2 Reliable over lifetime of product (0.0994, 0.412)
   3.3 Withstands heat (0.128, 0.529)

4. Appearance (0.0345)
   4.1 Simple Design (0.0307, 0.889)
   4.2 Looks relatively normal (0.00383, 0.111)

5. Flexible (0.207)
   5.1 Insulates (0.179, 0.867)
   5.2 Ambidextrous (0.0276, 0.133)

Cost Analysis: