Overview
The sponsor wanted to make an inflatable cushion that would provide stability and fix people's posture. The cushion would have individually inflatable cells so that the cushion can be inflated to fit different individuals, and provide the same level of care to people of different sizes. This cushion would be able to be easily moved from one wheelchair to another, and be collapsible. The sponsor wanted a lightweight, durable, and ergonomic cushion designed, that relied on an air bladder system for custom support.

Objectives
Our objectives were to design and make a manufacturing process for an inflatable cushion, that would provide support, be comfortable, and prevent the formation of pressure sores. It was also our objective to make the cushion easy to use, move, and not run on electricity.

Approach
- First we got the customer needs of wheelchair users from our sponsor who works with them.
- Then we looked into current products that are on the market and did patent research.
- Following that we began generating concepts for the different parts of the cushion.
- We made solidworks models for all concepts.
- We reached out to production companies and got feedback on concepts and designs.
- We used a selection process and worked with the sponsor to select the best concepts.
- We then created a prototype cushion.
- We tested the cushions inflation time, and load capacity.
- We used our testing to find which pumps would work best for inflation of the cushion.
- We also tested to make sure the cushion could support and provide comfort to patients over the entire range of weight and sizes.

Outcomes
- The sponsor now has designs that they are taking to a manufacturer.
- The result of our work was a unique device that takes a new approach to providing comfort, care, and stability for those who require the use of a wheelchair.