Engineering Design 100

Section 15 Team 6

Folding Shopping Cart

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Project Picture

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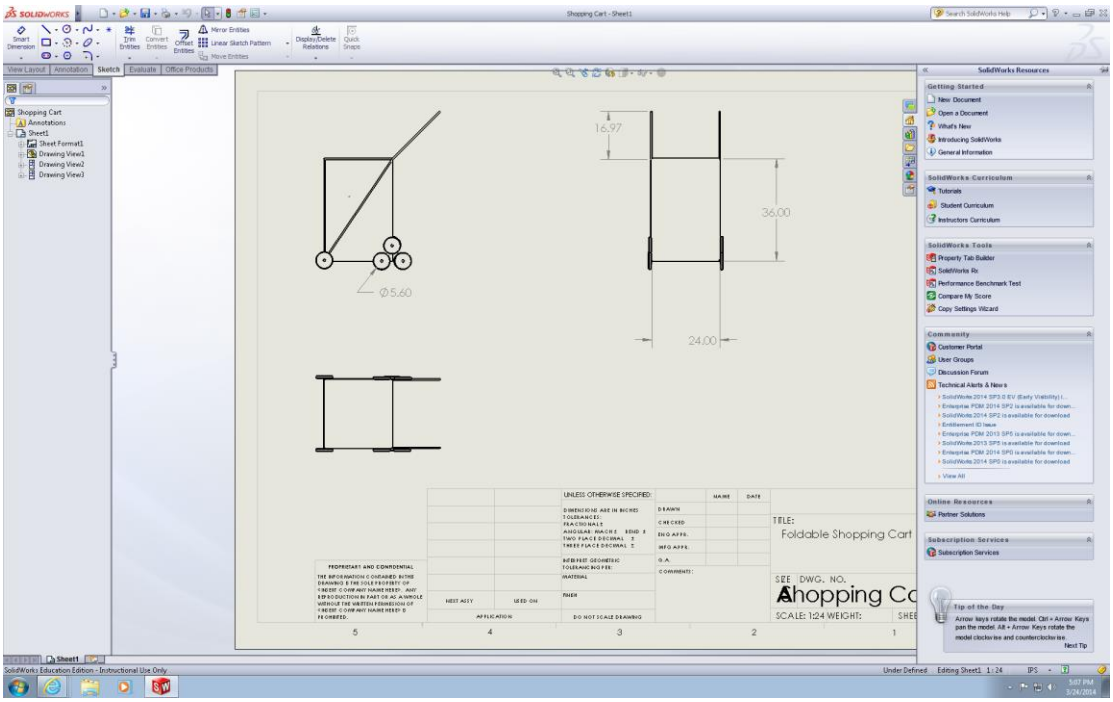
Abstract

Our team's folding shopping cart is designed for transporting groceries and other material with advanced of easy to use and compactly storage. Our team designed two tri-wheels for stabilize the cart when the customer moving stuff with stairs. It's creative, cheap, simple, and effective shopping cart.

Introduction

Our team goal is creating a fold-shopping cart for people who need carry a large amount of materials for people who live in apartment or house without elevator, especially for senior people. Our team spent amount of time for brainstorming and came up a capacity, stability and convenience cart with $50 budget. The cart includes detachable heavy-duty nylon canvas bag that is water-resistant with 100 lbs. weight

capacity. Our team designed two handles for toting and able to folds up in a snap for compact storage in tight spaces. The two tri-wheels designed for stabilize the cart when people carry groceries to stairs.



Description of the Design Task

Problem Statement

The problem presented to Team 6 of Section 15 of Engineering Design 100 was to design and construct a prototype of a folding shopping cart. The team was instructed to adhere to certain specifications throughout the design and construction process, and to conclude their efforts in a report to present their solution.

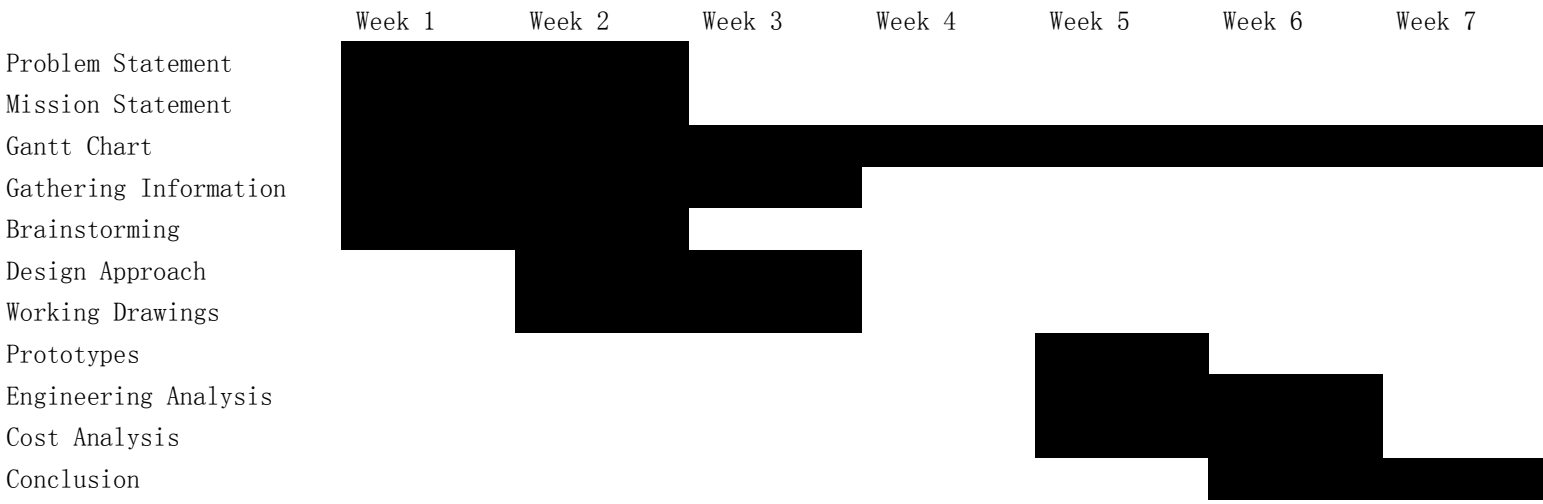
Mission Statement

The mission of Team 6 of Section 15 of Engineering Design 100 was to design a folding shopping cart and to construct a prototype while staying within the guidelines presented. The team also put together a report encompassing all of the details and findings of the design process.

Design Specifications

- The folding shopping cart should be easy to use (and assemble, if required).
- The folding shopping cart should be ideal for transporting groceries and some other materials.
- The folding shopping cart should fold compactly for easy storage.

- The material cost for the folding shopping cart should not exceed $50 unless it can be justified.
- The folding shopping cart should have a weight capacity of 100 lbs.



Customer Needs assessment

- Cheap
- Easy to handle
- Easy to maneuver
- Light weight
- Storage
- Strong

Concept generation

	A	B	C	D	Standar
Sum +'s	2	2	4	1	0
Sum 0's	2	2	1	3	5
Sum -'s	1	1	0	1	0
Net Score	1	1	4	0	0
Rank	2	3	1	4	5

Continue	Yes	Yes	Yes	NO	NO
Handling	0	0	1	0	0
Foldability	0	-1	1	0	0
Maneuverability	1	0	1	0	0
Resistant	-1	1	1	-1	0
Durability	1	1	0	1	0

Materials	**Cost**
Carbon fiber rods x10	$2.75
Interior bag	$3.00
Tri-wheel x2	$4.50
Regular wheel x2	$2.00
Rubber handles x2	$2.50
Total Cost	**$48.50**

Our product has a basic box shape about a meter in height and width. In order to fold the cart you simple compress the outer frame towards the center into a rectangular shape that is easy to store. There is no need to remove the bag. When using our cart you simply hold the rubber handles and push as you would any other shopping cart. The tri-wheels allow you to maneuver over steps with easy and control.

Conclusion

Through this project we were successfully able to design and create a prototype of a folding shopping cart. We first came together as a team and began brainstorming ideas for our shopping cart. We developed a total of four ideas, each with their own specific details, and compared them to a standard folding shopping cart. We then, as a team, determined what characteristics we liked and disliked about each idea based on consumer needs. We took into account things like ease of handling, durability, maneuverability, weight, strength, and cost. Through the design selection matrices we were able to successfully develop a finally product. The cart that we created is ideal for transporting groceries and other materials. The shopping cart is easy to use and folds so it’s easy for storage. Also the cart costs less than $50 and has a weight

capacity of up to 100 lbs. This product is ideal for consumers who need a folding shopping cart and we believe it will be successful in the market.