

Stair Chair: BME 200/300

Dates: 10/18/2024-10/24/2024

Client: Mr. Daniel Kutschera, PT
Advisor: Dr. James Trevathan

Team:

Matt Sheridan (Leader)
Dan Altschuler (Communicator)
Cody Kryzer (BSAC)
Luke Rosner (BWIG)
Abi Conners (BPAG)

Problem Statement

Create a mechanical device that temporarily handicapped patients can use to ascend and descend 3-5 stairs. The device should be inexpensive to fabricate, as compared to competing powered stair lifts, and be easy to set up and take down, both inside and outside the patient's home.

Brief Status Update

The team met this week with the hope of getting a stronger handle on the materials needed for our prototype and also the equations/math behind our design. The team had a lengthy meeting going over numbers and considering extra points of failure to add to our design. The final CAD model was completed by Luke and could be what the team uses for Show and Tell, but it will depend on the fabrication meeting with Dr. Trevathan on Friday.

Weekly Goals and Accomplishments

- Team
 - Met to discuss equations and create a mathematical model of our design
- Matt Sheridan
 - Did mathematics to calculate governing equations for the ramp given various materials/supports
 - Researched different materials to be used on prototype and final design
- Dan Altschuler
 - Researched governing equations for the model
 - Looked into different winches that could be used for the final design
 - Recorded the team meeting in LabArchives
- Cody Kryzer
 - Worked on calculations for testing
 - Researched materials for scale model
- Luke Rosner
 - Did calculations on loads on design
- Abi Conners
 - Met with team to discuss future work
 - Discussed equations/math for design

Upcoming Goals

- Team
 - Start fabricating prototype
 - Have final CAD model done for show and tell
- Matt Sheridan
 - Finalize governing equations and implement them into material decisions and prototype fabrication
 - Figure out specific testing that can be done on the prototype
- Dan Altschuler
 - Start fabrication on the prototype
- Cody Kryzer
 - Get materials ordered
- Luke Rosner
 - Work on fabrication of prototype
- Abi Conners
 - Order parts for prototype

Project Timeline

Deliverable	Deadline	People Assigned	Progress
Initial Client Meeting	9/13	ALL	100%
Product Design Specifications (PDS)	9/20	ALL	100%
Individual Research	9/20	ALL	100%
Design Matrix Criteria	9/27	ALL	100%
Design Ideas	9/27	ALL	100%
Preliminary Presentation	10/4	ALL	100%
Individual Research	10/4	ALL	100%
Preliminary Deliverables	10/9	ALL	100%
Decide upon Final Design	10/9	ALL	100%
Finished Model of Final Design	10/25	ALL	50%
Show and Tell	11/1	ALL	0%
Final Prototype Prepared (by Thanksgiving break)	11/26	ALL	0%
Final Presentation	12/6	ALL	0%
Final Deliverables	12/11	ALL	0%

Materials and Expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	QTY	Cost Each	Total	Link
Category 1										
									\$0.00	
									\$0.00	
Category 2										
									\$0.00	
									\$0.00	
								TOTAL:	\$0.00	