

# Design for disability simulation

ME 476C-1

Team B2

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Team members:

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# Project description

- \* One of the major constraints of humans to perform physical tasks is muscle strength, which can be reduced greatly as a result of neuromuscular damage in people with disabilities.
- \* There are other disabilities which cause problems for humans like hearing disabilities and blindness.
- \* In order to make able-bodied people feel like people with disabilities and experience their issues, we are building a device that lets the healthy experience their problems.

# Design (1) description

- People with neck disability are present in all around the world. And for their relief an existing design for the forehead belt to provide the support for neck shoulder and backbone
- The design work well in providing the required experience to demonstrate to the user how the disabled feels.



Figure 2: Neck,back and shoulder belt

## Design(2) description

- Low vision people are present in large number and for their aid an existing design is the glasses uses to view the objects in zooming like VR glasses design.
- The design supports the low vision people, who cannot see clearly so shaped glasses can help them visualize things clearly.



Figure 3: blindness Glass

# Design Implementation

## ❖ Blindness glasses

- BUZZEL
- Write his/her name
- Shape sorter

## ❖ Nick , back and shoulder belt

- Pick up something in the ground
- Run around the room



Figure 3 : shape sorter [1]

# CUSTOMER REQUIREMENTS

- The client requires that the team comes up with a design that meets specific requirements.
- The client's needs a design that is:
  - *Safe*
  - *Durable And reliable*
  - *transportable*
  - *Look professional*
  - *Easy to use and understand by children and adult*
  - *Requires user to perform certain tasks while simulating disability*
  - *At least three disabilities simulated*

# ENGINEERING REQUIREMENT:

Engineering Requirements	Target Values
Angle of Movement	0 Degrees
Total weight	less 5 Kg , less 1 Kg
Material Strength	1200 Gpa
Range of Motion	2.5 feet
Allowable Stress	100 Gpa
Size	Wedth 2 ft length 4 ft
Life time	At least 3 years
Transparency percentage	100%, 50%, 0%
Fatigue life	19 ksi
Bending stress	35 ksi


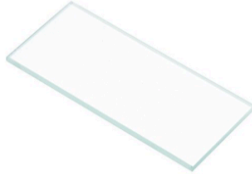

# SCHEDULE AND BUDGET

- \* Our Budget in this project is \$2000 for the implementation
- \* Our Anticipated expense is \$216 with the utilization as
  - \* Materials (11%)
  - \* Manufacturing (50%)
  - \* Prototyping (5%)



# SCHEDULE AND BUDGET

	<p>1 in. x 6 ft. Foam Pipe Insulation  <u>Price</u>(2.13\$ each Req.6)</p> <p>[2]</p>
	<p>2 in. Quick Release Work Belt  <u>Price</u> (4.97\$ each Req.4)</p> <p>[3]</p>
	<p>1/2 in. x 36 in. Aluminum Flat Bar  <u>Price</u> ( 2.65\$ each Req.2)</p> <p>[4]</p>
	<p>Curved Plastic Board  <u>Price</u> (15.25 \$ each Req.4)</p> <p>[5]</p>

	<p>Mira Flex: Nicki53 <del>Unbreakable</del> Kids Eye Glass  <u>Price</u> ( 69.95)</p> <p>[6]</p>
	<p>Forney 56801 Cover Lens, Non-Hardened Glass, 2-Inch-by-4-1/4-Inch, Clear  <u>Price</u> (4.53 \$) Req. 3 with different colors</p> <p>[7]</p>
	<p>12 in. x 24 in. Copper Aluminum Sheet  <u>Price</u> (15.98 each Req.2)</p> <p>[8]</p>

# SCHEDULE AND BUDGET

- \* Next term in ME486C we will build both of these designs
- \* In this term we work more in design 1 and next term we will work in the design 2

# SCHEDULE FOR NEXT SEMESTER

	i	Task Name	D...	Start	Jan		Feb				Mar				Apr				May 7				
					Jan 15	Jan 22	Jan 29	Feb 5	Feb 12	Feb 19	Feb 26	Mar 5	Mar 12	Mar 19	Mar 26	Apr 2	Apr 9	Apr 16		Apr 23	Apr 30		
1		Team Meeting	1d	01/15/18	Team Meeting																		
2		Staff Meeting	1d	01/22/18	Staff Meeting																		
3		Team Meeting	1d	01/29/18	Team Meeting																		
4		Hardware Review 1	1d	02/05/18	Hardware Review 1																		
5		Staff Meeting	1d	02/12/18	Staff Meeting																		
6		Team Meeting	1d	02/19/18	Team Meeting																		
7		Individual Analysis II	6d	02/19/18	Individual Analysis III																		
8		Hardware Review 2	1d	03/05/18	Hardware Review 2																		
9		Midpoint Presentatic	1d	03/12/18	Midpoint Presentation																		
10		Midpoint Report	1d	03/12/18	Midpoint Report																		
11		Staff Meeting	1d	03/26/18	Staff Meeting																		
12		Team Meeting	1d	04/02/18	Team Meeting																		
13		Final Product Testinç	6d	04/09/18	Final Product Testing Proof																		
14		Poster	6d	04/09/18	Poster																		
15		UGRADs Practice	1d	04/09/18	UGRADs Practice																		
16		UGRADs	1d	04/23/18	UGRADs																		
17		Final Report	1d	04/30/18	Final Report																		
18		CAD package	1d	04/30/18	CAD package																		
19																							
20																							
21																							

# REFERENCES

- \* [1] ", Finewoodentoys.com, 2017. [Online]. Available: [http://www.finewoodentoys.com/nile/image.img?color=54bc00&text=333333&accent=fff53f&compliment=54bc00&navigation=54bc00&heading=333333&title=000000&logo=000000&link=d63b2c&picture.image.url=%2Ffiles%2F3373883%2Fuploaded%2FGC\\_shape\\_color\\_sorter\\_3.jpg&picture.image.mask.apply=false&stage.width.max=760&cache=1474840395865](http://www.finewoodentoys.com/nile/image.img?color=54bc00&text=333333&accent=fff53f&compliment=54bc00&navigation=54bc00&heading=333333&title=000000&logo=000000&link=d63b2c&picture.image.url=%2Ffiles%2F3373883%2Fuploaded%2FGC_shape_color_sorter_3.jpg&picture.image.mask.apply=false&stage.width.max=760&cache=1474840395865). [Accessed: 05- Nov- 2017]
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- \* [3] "Husky 2 in. Quick Release Work Belt-HD335320 - The Home Depot", The Home Depot, 2017. [Online]. Available: <https://www.homedepot.com/p/Husky-2-in-Quick-Release-Work-Belt-HD335320/202311429>. [Accessed: 05- Nov- 2017].
- \* [4] "Everbilt 1/2 in. x 36 in. Aluminum Flat Bar-800217 - The Home Depot", The Home Depot, 2017. [Online]. Available: <https://www.homedepot.com/p/Everbilt-1-2-in-x-36-in-Aluminum-Flat-Bar-800217/204604762>. [Accessed: 05- Nov- 2017].
- \* [5] "Cite a Website - Cite This For Me", Amazon.com, 2017. [Online]. Available: [https://www.amazon.com/Pro-Force-Curved-Plastic-Rebreakable/dp/B0032OCW4S/ref=sr\\_1\\_fkmr2\\_1?s=sporting-goods&ie=UTF8&qid=1509865153&sr=8-1-fkmr2&keywords=Curved++unbreakable+Boar+d](https://www.amazon.com/Pro-Force-Curved-Plastic-Rebreakable/dp/B0032OCW4S/ref=sr_1_fkmr2_1?s=sporting-goods&ie=UTF8&qid=1509865153&sr=8-1-fkmr2&keywords=Curved++unbreakable+Boar+d). [Accessed: 05- Nov- 2017].
- \* [6] "Amazon.com: Miraflex: Nicki53 Unbreakable Kids Eyeglass: Tools & Home Improvement", Amazon.com, 2017. [Online]. Available: [https://www.amazon.com/s/ref=nb\\_sb\\_noss?url=search-alias%3Dtools&field-keywords=Miraflex%3A+Nicki53+Unbreakable+Kids+Eyeglass+](https://www.amazon.com/s/ref=nb_sb_noss?url=search-alias%3Dtools&field-keywords=Miraflex%3A+Nicki53+Unbreakable+Kids+Eyeglass+). [Accessed: 05- Nov- 2017].
- \* [7] "Cite a Website - Cite This For Me", Amazon.com, 2017. [Online]. Available: [https://www.amazon.com/dp/B000PS8S60/ref=sxbs\\_sxwds-stvp\\_1?pf\\_rd\\_m=ATVPDKIKXoDER&pf\\_rd\\_p=3341940462&pd\\_rd\\_wg=0xX3l&pf\\_rd\\_r=XVSNHAHZ1X7414GR8DTC&pf\\_rd\\_s=deskto-p-sx-bottom\\_slot&pf\\_rd\\_t=301&pd\\_rd\\_i=B000PS8S60&pd\\_rd\\_w=iss4u&pf\\_rd\\_i=clear+plastic+lens&pd\\_rd\\_r=bdf4116-d6a8-44eb-b2bf-d5f949dafc1b&ie=UTF8&qid=1509866598&sr=1](https://www.amazon.com/dp/B000PS8S60/ref=sxbs_sxwds-stvp_1?pf_rd_m=ATVPDKIKXoDER&pf_rd_p=3341940462&pd_rd_wg=0xX3l&pf_rd_r=XVSNHAHZ1X7414GR8DTC&pf_rd_s=deskto-p-sx-bottom_slot&pf_rd_t=301&pd_rd_i=B000PS8S60&pd_rd_w=iss4u&pf_rd_i=clear+plastic+lens&pd_rd_r=bdf4116-d6a8-44eb-b2bf-d5f949dafc1b&ie=UTF8&qid=1509866598&sr=1). [Accessed: 05- Nov- 2017].
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