

Lerner Exoskeleton I

- **Team G:**
 - **Mohammad Alajmi** (Project Manager)
 - **Mahdi Alajmi** (Client Contact)
 - **Saud Almutairi** (Web designer)
 - **Abdullah Alazemi** (Document Manager1)
 - **Mohammad Alkhaldi** (Document Manager2)
 - **Barjas Aldooseri** (Budget Liaison)



Introduction

- Project Description
- Updates
- Moving Forward
- Hardware Review 2

Project Description

- The goal is to design adjustable system to help the disabilities people to walk from (13-75) ages.
- Robotic exoskeletons help neuromuscular disorder to walk.
- System provide assistance at the knee and ankle joints.
- Our Client is Zach Lerner, Ph.D, director of NAU's Biomechatronics Lab.



Figure 1: Adjustable Human-Exoskeleton Mounting Interface

Project Description



Updates

- 50% of the design have been accomplished.
- The CAD package has been updated.
- Contract with Machine Shop.

Updates

Design changes:

- Changing the material from Carbon Fiber to thermoplastic due to the cost of the Carbon Fiber and it will take too much time for ordering it.
- Adding bearings for rotation.
- Change the thickness of the foot plate to make it thinner, to make the design more comfortable for the users.
- Adding multiple foot plate to adjust different size of limbs, by replacing the new one with the old one.

What is Left ?

- Attaching thermoplastic to the project instead of Carbon Fiber.
- Adding belts (velcro tape)
- Apply foam to the feet plates.
- Building a few different sizes of feet plate.
- Apply the connection parts for the motor.

Analytical Analyses

- LightWeight.
- Strength Material.
- Do on and Do off.

Moving Forward

- Our first priority is to improve the exoskeleton to make sure our users are comfortable while using it.
- Two connections part for the motor and thermo-plastic covering needed to be manufactured.
- Test the design between our team members and some volunteers.

Contingencies.

- **Schedule:**

Week 7 : Finalized the comments from Hardware Review 2 to our design and testing proof of our design.

- **Budget :**

As a team, we gathered \$300 for any additional redesigns.

Responsibility.

- **Saud** : Machine shop and updating the website.
- **Abdullah** : Edit presentation and update the team with the meeting minutes.
- **Mahdi** : Update the Gantt Chart and Solid work.
- **Alajmi** : Solid work and observing the team status.
- **Alkhaldi** : Edit reports and update the team with meeting minutes.
- **Barjas** : Budget responsibility and machine shop

Gantt Chart

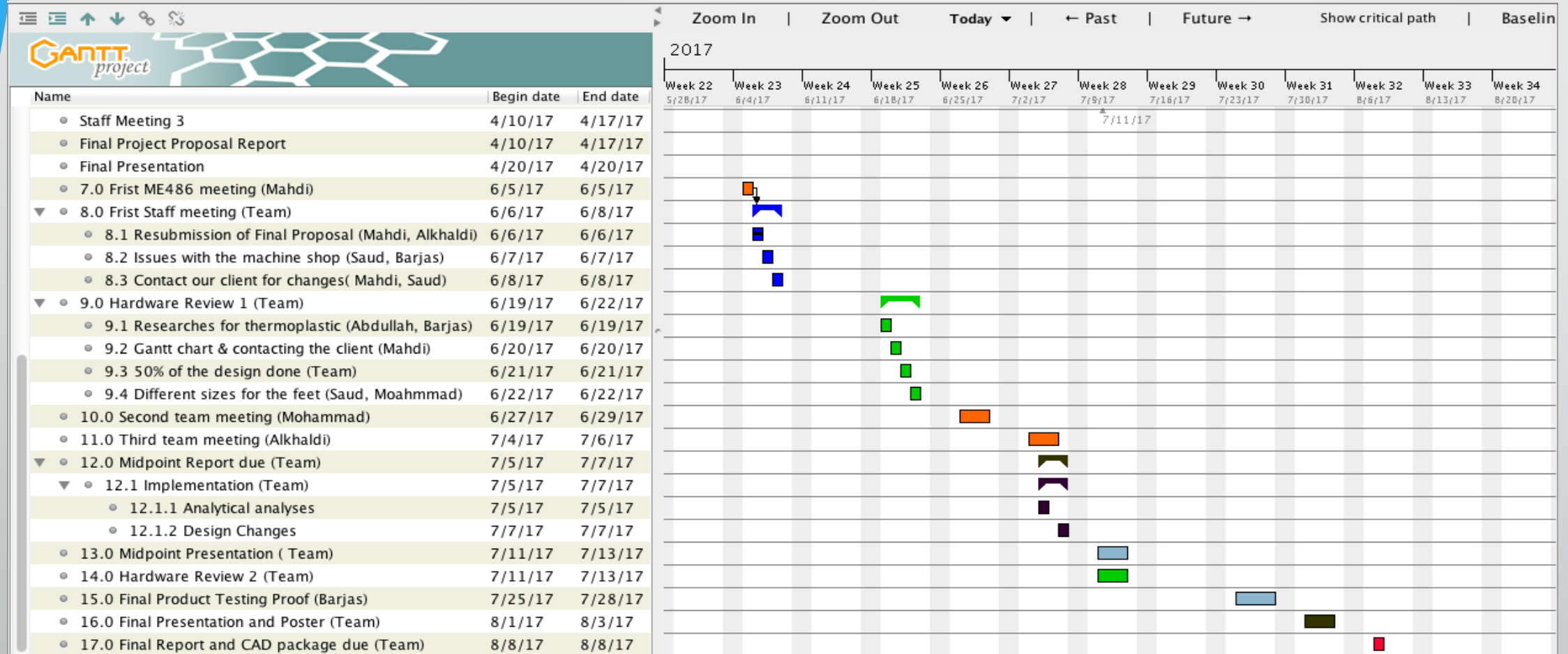


Figure 3: Gantt Chart

Budget

Project Budget : \$500

Total Amount Available: \$(-823)

Actual Expenses to Date:\$1323



Changes.

- Updating the Gantt chart with the updated tentative schedule.
- Requesting more \$500 from the Mechanical Department.

Hardware Review2

- Design will work after having some feedback from the second hardware review, and it will work before the Product Testing Proof.
- How system work?

Questions?

- Thank you for your attention.