

Ergonomic re-design of a surgical stapling device

Client: Dr. Amy Liepert, liepert@surgery.wisc.edu

Advisor: Beth Meyerand, memeyerand@wisc.edu

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Team:

- Andrew Fugate - afugate@wisc.edu, Team Leader
- Albert Anderson - afanderson2@wisc.edu, Communicator
- Therese Besser - tmbesser@wisc.edu, BSAC
- Ellen Restyanszki, restyanszki@wisc.edu, BWIG & BPAG

Problem Statement:

Surgical staplers have undergone many design modifications including the recent addition of powered devices. Stapling devices are used both for intestinal resections and anastomoses as well as for vascular control. The users of these devices have also changed overtime with both the increase in female surgeons as well as an aging surgeon population.

Opportunities for improvements in device design for the increasingly diversified surgeon users are multiple. This project provides the opportunity for lab based and field study investigation of the ergonomic implications for the device users as well as potential for novel design modifications and/or solutions.

Summary of Team Role Accomplishments

Andrew - Executive Summary, Finalize preliminary prototype

Albert - Executive Summary

Therese - Executive summary

Ellen - Executive summary, notebook organization

Summary of Design Accomplishments

We had a meeting with Dr. Liepert, during which she provided us with valuable feedback regarding our clay prototypes. She also offered to bring us into meetings with surgeons at UW Hospital or with surgical residents to gain more feedback and test our device.

Activities:

Person	Task	Weekly Total	Semester Total
Andrew	<ul style="list-style-type: none">• Executive summary, SolidWorks prototyping	3	19
Albert	<ul style="list-style-type: none">• Executive Summary	2	16.5
Therese	<ul style="list-style-type: none">• Executive summary• Team meeting	2	22
Ellen	<ul style="list-style-type: none">• Executive summary• Team meeting	2	18

Statement of Team Goals:

- Print stapler prototype
- Develop testing plan for stapler

Individual Goals:

Andrew - Discuss Dr. Liepert's reactions and implement them in the next prototype

Albert - Attend meeting with Dr Liepert and receive feedback on initial prototype

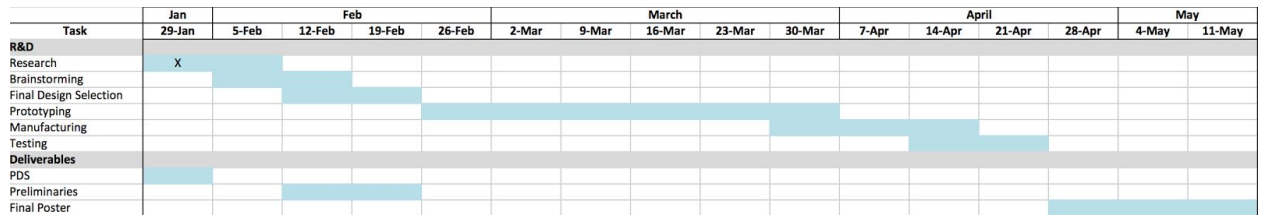
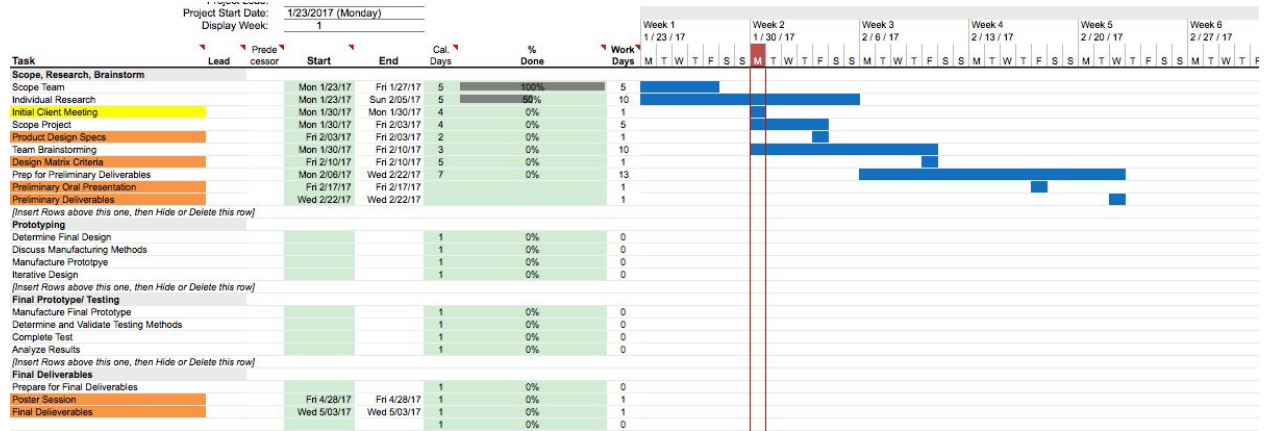
Therese - Determine testing protocol

Ellen - Begin organizing final deliverables

Difficulties:

- We foresee issues with the design of the mechanism inside the stapler.
- The 3D printer costs a lot of money based on how early it is in the semester. We need to find an affordable alternative to make a prototype to present to Dr. Liepert.
- 3D printing is taking longer than anticipated because of unforeseen limitations.
- We need to find out if it is in our scope to contact and potentially work with Ethicon. To be successful for our client we are dependant of either selling our idea or working with this company.

Project Schedule/Timeline:



Expenses:

Date	Store	Reason	Total Items	Purchase Total	Description
24 Feb 2017	Hobby Lobby	Prototyping	7	\$30.57	Molding clay, foam blocks, super glue, pipe cleaners