

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 - Finalized poster and practiced presentation

Albert - Finalized poster, printed final poster, practiced presentation

Therese - Finalized poster, finished wrist strain testing, began final paper

Ellen - Edited and finalized poster, wrote anthro testing protocol, carried out testing

Summary of Design Accomplishments

The team finished the final poster, and our final prototype.

Activities:

Person	Task	Weekly Total	Semester Total
Andrew	<ul style="list-style-type: none">• Poster• Prototype assembly	3	27
Albert	<ul style="list-style-type: none">• Finalized Poster• Printed Poster• Practiced Presentation	4	20.5
Therese	<ul style="list-style-type: none">• Poster• Wrist strain testing• Acquired final prototype	5	31
Ellen	<ul style="list-style-type: none">• Poster• Testing	5	28

Statement of Team Goals:

- Print stapler prototype
- Develop testing plan for stapler

Individual Goals:

Andrew - prepare the presentation, finalize the final paper and notebook

Albert - Polish presentation, work on final paper and notebook

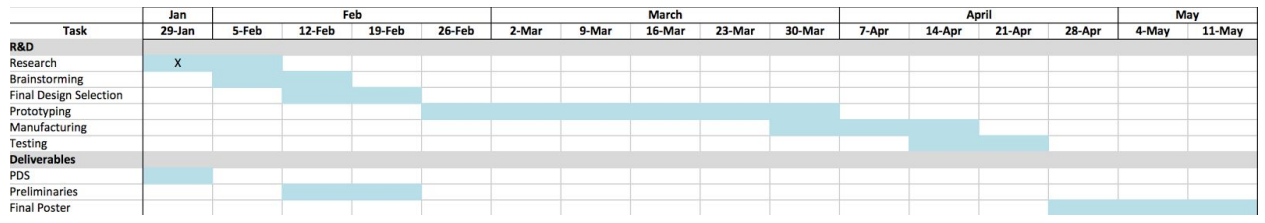
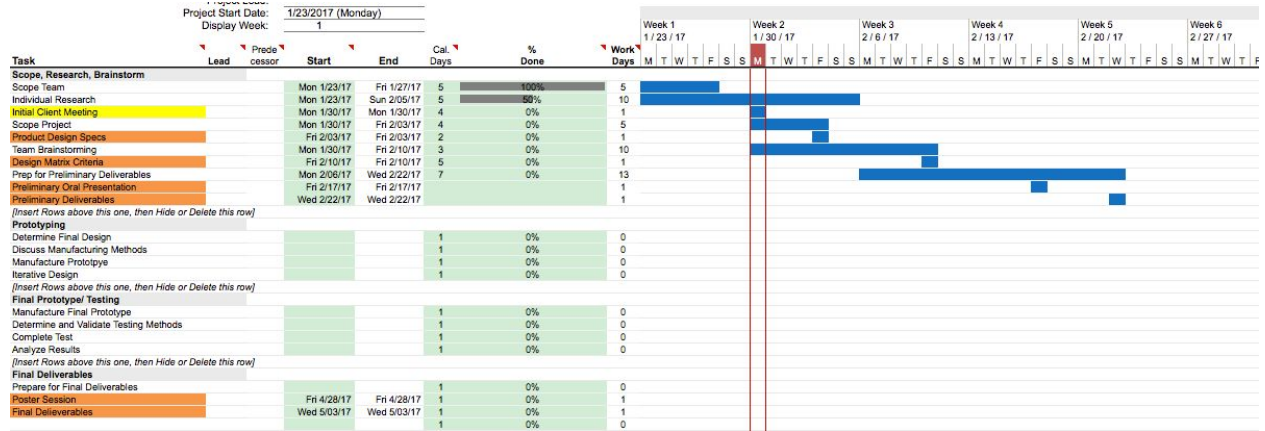
Therese - Complete final paper and notebook

Ellen - Work on final paper

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