

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 prototype solidworks and sent into printing

Albert - Assisted with the final prototype

Therese - Finalized executive summary, testing protocol, poster

Ellen - Anthro Calculations, Poster

Summary of Design Accomplishments

The team was able to get together to make design edits to our first modeled prototype and begin working on our final deliverables.

Activities:

Person	Task	Weekly Total	Semester Total
Andrew	<ul style="list-style-type: none">• Updated dimensions on solidworks model	4	24
Albert	<ul style="list-style-type: none">• Solidworks designing	3	16.5
Therese	<ul style="list-style-type: none">• Poster• Finalized executive summary• Testing protocol	4	26
Ellen	<ul style="list-style-type: none">• Anthro calculations• Poster	2	23

Statement of Team Goals:

- Print stapler prototype
- Develop testing plan for stapler

Individual Goals:

Andrew - Finish poster, begin final paper

Albert - Finish poster, begin final paper

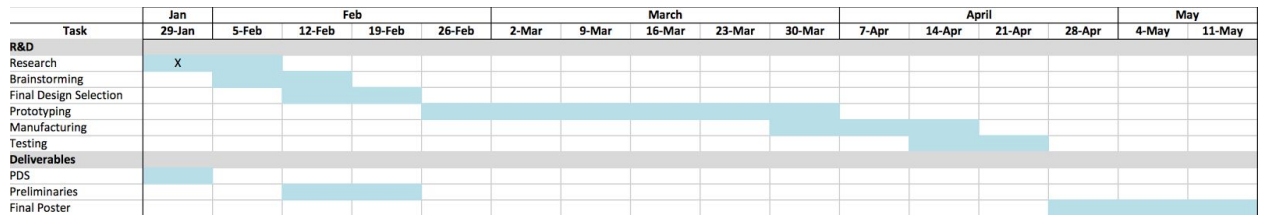
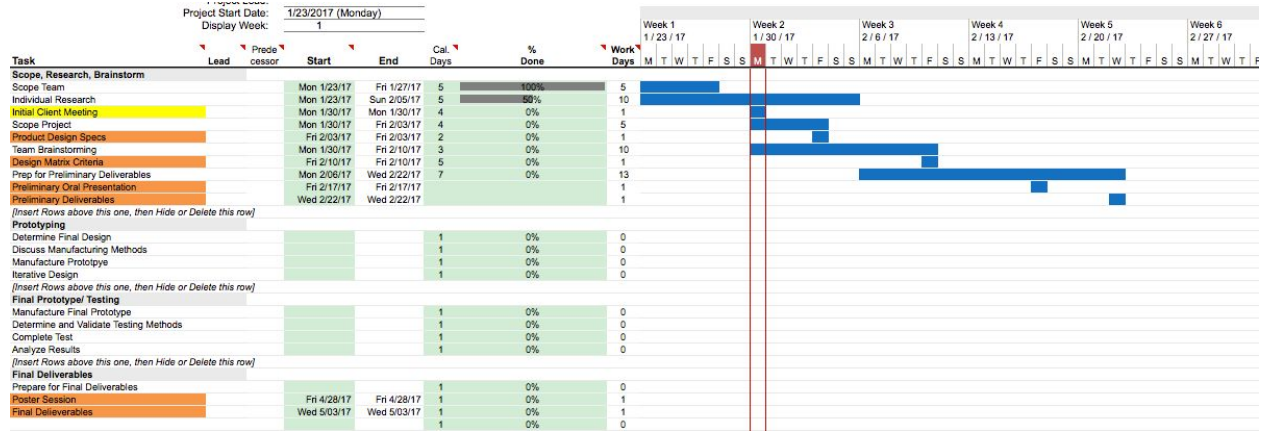
Therese - Finish testing and poster, begin final paper

Ellen - Add figures to poster, begin 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