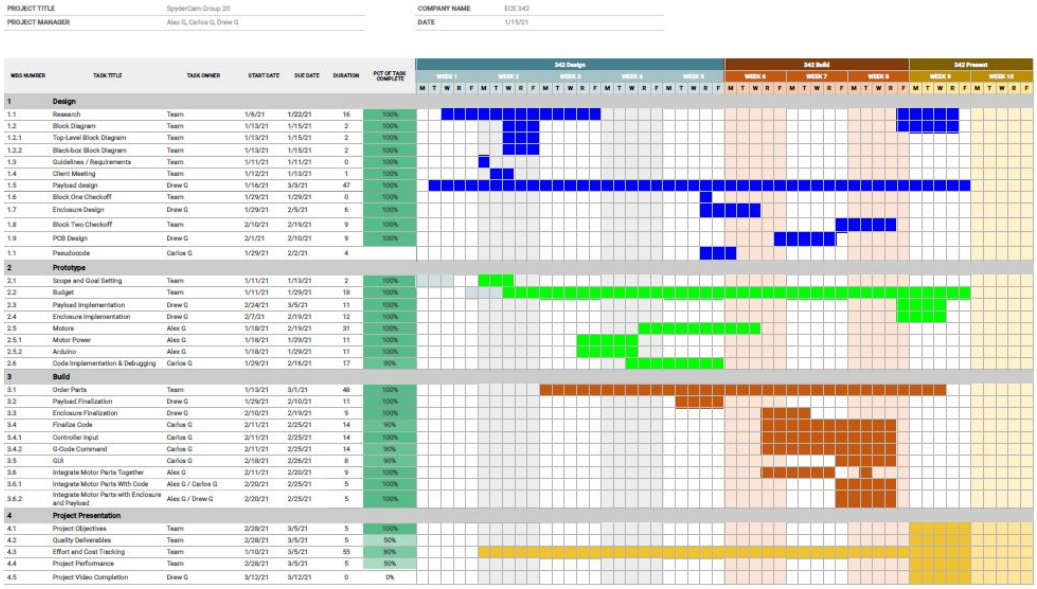
Executive Project Summary

The Swiss Army Spider is designed to move a payload over a 3D plane the size of a piece of letter paper. The system has a custom printed payload designed to support a variety of tools and mounts, making the system highly customizable to the client's needs. The system is easy to use depending on the desired means of control as it supports the input of controls through single line G-code commands, a text file of G-code commands, or inputs from a user controlled joystick.

Beginning our project we discussed our individual strengths and interests. From there we sectioned our project into three categories, software & firmware, mechanical, and manufacturing. The project was broken down into individual blocks, color coordinated to indicate one of the three prior categorizations, with each block being connected with clearly defined interface definitions to allow a clear understanding of how each block is expected to interact with the surrounding blocks. Only after each individual block was complete was system integration attempted, where most of the design flaws were discovered and revised accordingly.



PROJECT TITLE	SpyderCam Group 20	COMPANY NAME	ECE 342
PROJECT MANAGER	Alex G, Carlos G, Drew G	DATE	1/15/21

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION	PCT OF TASK COMPLETE
1	**Design**					
1.1	Research	Team	1/6/21	1/22/21	16	100%
1.2	Block Diagram	Team	1/13/21	1/15/21	2	100%
1.2.1	Top-Level Block Diagram	Team	1/13/21	1/15/21	2	100%
1.2.2	Black-box Block Diagram	Team	1/13/21	1/15/21	2	100%
1.3	Guidelines / Requirements	Team	1/11/21	1/11/21	0	100%
1.4	Client Meeting	Team	1/12/21	1/13/21	1	100%
1.5	Payload design	Drew G	1/16/21	3/3/21	47	100%
1.6	Block One Checkoff	Team	1/29/21	1/29/21	0	100%
1.7	Enclosure Design	Drew G	1/29/21	2/5/21	6	100%
1.8	Block Two Checkoff	Team	2/10/21	2/19/21	9	100%
1.9	PCB Design	Drew G	2/1/21	2/10/21	9	100%
1.1	Pseudocode	Carlos G	1/29/21	2/2/21	4	
2	**Prototype**					
2.1	Scope and Goal Setting	Team	1/11/21	1/13/21	2	100%
2.2	Budget	Team	1/11/21	1/29/21	18	100%
2.3	Payload Implementation	Drew G	2/24/21	3/5/21	11	100%
2.4	Enclosure Implementation	Drew G	2/7/21	2/19/21	12	100%
2.5	Motors	Alex G	1/18/21	2/19/21	31	100%
2.5.1	Motor Power	Alex G	1/18/21	1/29/21	11	100%
2.5.2	Arduino	Alex G	1/18/21	1/29/21	11	100%
2.6	Code Implementation & Debugging	Carlos G	1/29/21	2/16/21	17	90%
3	**Build**					
3.1	Order Parts	Team	1/13/21	3/1/21	48	100%
3.2	Payload Finalization	Drew G	1/29/21	2/10/21	11	100%
3.3	Enclosure Finalization	Drew G	2/10/21	2/19/21	9	100%
3.4	Finalize Code	Carlos G	2/11/21	2/25/21	14	90%
3.4.1	Controller Input	Carlos G	2/11/21	2/25/21	14	100%
3.4.2	G-Code Command	Carlos G	2/11/21	2/25/21	14	90%
3.5	GUI	Carlos G	2/16/21	2/26/21	8	90%
3.6	Integrate Motor Parts Together	Alex G	2/11/21	2/20/21	9	100%
3.6.1	Integrate Motor Parts With Code	Alex G / Carlos G	2/20/21	2/25/21	5	100%
3.6.2	Integrate Motor Parts with Enclosure and Payload	Alex G / Drew G	2/20/21	2/25/21	5	100%
4	**Project Presentation**					
4.1	Project Objectives	Team	2/28/21	3/5/21	5	100%
4.2	Quality Deliverables	Team	2/28/21	3/5/21	5	50%
4.3	Effort and Cost Tracking	Team	1/10/21	3/5/21	55	80%
4.4	Project Performance	Team	2/28/21	3/5/21	5	50%
4.5	Project Video Completion	Drew G	3/12/21	3/12/21	0	0%

Figure 1: Team Gantt Chart

Important project development skills were learned through the completion of this project. Taking extra time for design and research can save time, money, and improve the overall project quality. By doing proper research, it is known what each part can do and what is needed for it to operate as intended. Thus, the parts are known to work with the design instead of having to alter the design to work with the parts. System integration is one of the most important parts of the design process. While each block completed may work in isolation it is critical to understand how said block is to interact with blocks it is taking input from, blocks it is sending outputs to, and the block's role in the overall system. System integration should be done frequently throughout the project, so sets of blocks can be tested as one prior to the final system integration.