

E-Ink IoT Labels

Executive Summary

Problem Description:

The purpose of the electronic display was to replace traditional classroom labels with a screen that updates periodically throughout the day. It is common for classrooms to be used by various courses throughout the day and a label that specifies which course is in session is incredibly beneficial for students. The system was designed to help students navigate the campus quickly and efficiently.

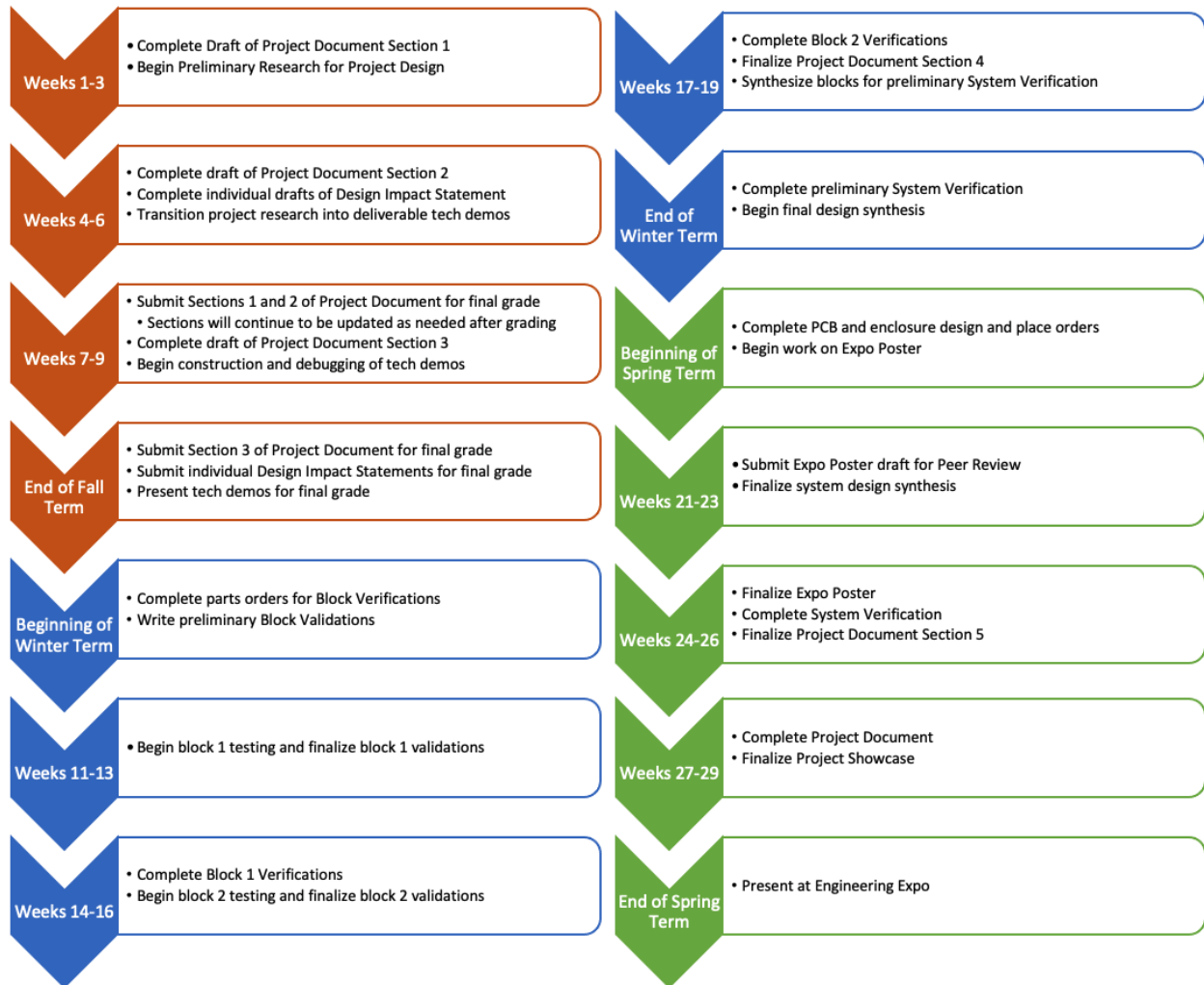
Development:

When we started design work on the project we talked as a team, and did some preliminary brainstorming about what exactly we wanted the device to do, and ways that we could accomplish those tasks. Once we had decided on what the device would do and how it would do it, we broke the device down into smaller blocks. Each member took blocks based on things that they had interest or experience working with.

Once this phase of conceptual design and role assignment was completed, we moved on to block prototyping. Each member contributed two design blocks to the overall system, and each block was tested independently before it was added to the overall design architecture. This process led to some confusion when it was time to integrate the blocks into a single system; however, we were able to work together to create a system that met our standards for verification.

The main design revision that occurred as part of this process was a change from solely charging the device via solar panels, to including a micro USB charging port. This was done to reduce the necessary charging capabilities of the solar panel, as indoor lighting made it difficult to achieve optimal power levels. Minor modifications to the enclosure design and PCB were made as these system changes were implemented.

Timeline:



Key Lessons:

One of the important lessons we learned from this project is that communication is important for keeping each team member on the same page. In addition, communication helps resolve any potential issues that two blocks may have when they interact. A project becomes more digestible when it is broken down into blocks and evenly distributed among members. Furthermore, reaching out for help from instructors or project partners is incredibly useful and sometimes crucial. Thus, it is good to meet with them frequently and discuss the state of the project.