

EE 4910 WEEKLY REPORT: 5

3/17/2026 - 3/24/2026

Group number: 06

Project title: Developing a Cost Effective NIR VIS Spectrometer

Client &/Advisor: Avishek Das & Manojit Pramanik

Team Members/Role: Ryan Majstorovic, Evan Tamer, Dawson Posekany, Samar Gill

Weekly Summary

The team did not meet in lab this week due to spring break, but continued making progress on project documentation remotely. This included building system-level diagrams to capture the current design state, consolidating component and design decisions, and ensuring all project information is up to date.

All microcontrollers have been received and distributed to team members, allowing each person to test code and make changes independently going forward. The team also discussed the approach for data visualization and decided to move forward with Python over LabVIEW, given its greater flexibility and potential for future development into a standalone application.

A meeting with Avishek is scheduled for this Thursday to revisit the grating selection. The team is evaluating whether to switch from a reflective grating to a transmission grating, and this discussion will help determine the final direction before any additional components are ordered.

Past week accomplishments

Samar: Created a PowerPoint presentation outlining the project's components, current progress, and other relevant design information. This presentation will also serve as the basis for the team's upcoming lightning talk for Senior Design.

Evan: Reviewed microcontroller code previously written by Samar to gain a better understanding of it. Also began to work on Python code for the user interface.

Ryan: Ran simulations for the difference between transmission and reflective gratings. Collected the orders that arrived and distributed the microcontrollers to allow individual testing of the data capture code.

Dawson: Reviewed software that the team could use to keep track of progress. I ended up choosing to go with Apache DolphinScheduler as it has smooth gantt chart making capability and integration with GitHub and other software.

Pending issues

1. We still have not had a chance to discuss the second order reflections and how to work around them with Avishek.

Individual contributions

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Ryan Majstorovic	Order distribution and simulations for transmission vs reflective grating	4	29
Dawson Posekany	Reviewed PCB design and looked for optimizations.	3	22
Samar Gill	Created PowerPoint to track progress, document components, and prepare for upcoming lighting talk.	3	24
Evan Tamer	Reviewed Samar's code and started working on setting up Python	3	25

Comments and extended discussion

Plans for the upcoming week

Samar & Evan: Start integrating the CCD with the microcontroller and stream the data to our computer through USB connection. Verify that the sensor is working correctly before beginning optimization steps. Evan will also discuss the details of the calibration device so that parts can be ordered.

Ryan: Solder the components for the ccd driver boards and complete verification and validation of the ccd driver code. Finalize design decisions over transmission vs reflective grating and plan to address 2nd order reflections.

Dawson:

1. Continue to catch up with Ryan's timer setup.
2. Solder the CCD driver board
3. Prepare High level design presentation and visuals.

Appendix:

PowerPoint link (view only):

<https://1drv.ms/p/c/9f85d9206630d4b9/IQAmPuJMAZ83QanR5pba8jq4ASZK5YMS1UGxX1BiBnTmx1E>