

## **Appendix I: Student Feedback**

Question: How engaged were you during this lab? Did you enjoy it? If so why, or why not?

Responses received:

- I was engaged! Fun to create something that works!
- Yes! Was lit! 10/10 would recommend
- I was gone for the first two days so I was not very engaged in the lab. I think I would have liked it more if I was here the first couple of days
- 7/10
- On day 2, when the UW people were here, I was very engaged. I read all the instructions and led my lab. The next day I wasn't so much because we started to experience difficulties. I enjoyed this lab because I felt 'like a scientist' in a way. Instead of determining pH with strips we did it the harder way but the results were more specific.
- I was pretty engaged, I enjoyed this lab because it was interesting.
- I was very engaged, I did indeed enjoy this lab because it was fun.
- I was completely engaged during most of the lab. I did enjoy it. I was interested to try a lab that college students designed.
- I was not very engaged in this lab. I did not enjoy it only because something about the sensor was messed up so we go to do nothing besides wait and try to fix the issue which did not happen.
- I was very engaged in this lab because I got to write code. However, I was only here for one day, the first day of the lab, so my understanding still needs help. I very much enjoyed this lab because writing code is very cool.
- I was pretty engaged. Like 8/10. I enjoyed building the system.
- I enjoyed this lab very much and was engaged
- I was fully engaged in this lab. I enjoyed every bit because this lab was fun by identifying pH of solutions. I like using computers so this experiment was enjoyable.
- I was very engaged during this lab. I did enjoy the lab because we got to make a sensor and type commands into a computer.
- I was engaged in mainly in troubleshooting. Our lab didn't work so I tried to figure out why. Despite our lab being a failure, I do enjoy (trying to) fixing things. It'd be more enjoyable if everything worked though.
- I didn't enjoy it so much because I was confused about what we were doing but I think it was a very cool lab.
- I was very engaged in this lab even though it didn't work for us day 1. Overall, on day 2 we got it to work so then I enjoyed it. I really liked to try other ways besides titration and strips to find the pH of a solution.
- I really liked the lab. I really liked putting the parts together and trying to figure out what you are doing.
- I was very engaged during the lab.
- I enjoyed the lab because the colors were cool and our data was pretty close to the class average.
- I was pretty engaged. It was fun because cabbage juice is pretty.

- I enjoyed this lab because it involved using technology that is usually not used which was engaging.
- I was very engaged during this lab and enjoyed it very much mainly because I was learning new things and seeing strange equipment though I also appreciated the colors.
- I was engaged thoroughly in the lab and enjoyed it a lot like how to try and build sensors.
- I was very engaged and I enjoyed it because it was real science and I didn't have to write anything down. Also, the oceanographers were nice.
- I felt that during this lab I was engaged, I found the lab had a good connection between class and real world science.
- This lab was fun and engaging. I enjoyed assembling the spectrophotometer and using the computer software program to see the results of pH. Wish there would have been more time to do a more thorough analysis of the data/results.
- I was very engaged in this lab. I enjoyed it because we learned how to build a sensor and record different pH levels like scientists.
- I was sort of engaged. I knew what was going on. I enjoyed it because building the spectrophotometer was fun.
- It was fun but I wanted to actually get a pH around 8 since that was the accepted value
- I was quite engaged due to the interesting nature of the lab.
- Very engaged. It was cool to see a realistic application of what we are learning, so yes I enjoyed it.
- I was fairly engaged. I really enjoyed the lab and it gave me more knowledge on the process of finding pH and why it is important.
- I was very engaged physically in the lab but not mentally. The lab I found was pointless and a waste of time because there are machines already made to detect pH.
- My lab group and I worked hard for once during this lab, making it enjoyable, especially creating the sensor and using BeagleTerm to code really helped us work hard.
- On a scale of 1-10 I would say a 7 because I liked the hands-on aspect of building the sensor and getting the pH samples but it was frustrating trying to get the BeagleTerm to work for us. But I did enjoy the lab and I thought it was fun and interesting.
- I was very engaged. I enjoyed the lab very much because of the hands-on activity.
- Easy to understand. Some technical issues. All in all I felt the lab was simple if you actually followed and read the instructions given. The computer part of the job was simple for my lab group
- This lab was super fun and easy, really simple! The lab was easy to understand and not at all hard to do, it really encourages hands-on labs such as itself. Overall really enjoyable and awesome!
- I wasn't here on Wednesday but Tuesday was fun creating the box thing and actually seeing the technicalities that go into it and getting it to work with pH balances of things.
- I was engaged during this lab. I enjoyed it because it was simple and easy to follow.
- Overall, I enjoyed it for the most part. The first day it was fun but the second day wasn't when we would try to get data and it would be different every single time.
- I was pretty engaged until the computer stopped working and we couldn't do anything. That's when it got lame. I kinda enjoyed it, I like working with my hands so building the sensor was the best part for me. Overall this lab was okay, just need to work on the bugs on the computer and it would be sweet.

- I was engaged and enjoy working with electronics
- I liked the lab overall because it combines engineering and science.
- I thought it was a fun lab and I enjoyed it and using the light sensor
- Yes it was fun, mostly boring doing the same thing over and over again
- I enjoyed the lab, it was fun making electronics and working with programming.
- I wanted to be engaged but having three people in a group made it so that one was always shut out. I think pairs might be better for this lab so everyone can participate.
- I was engaged and enjoyed it because we got to build a sensor
- I found this lab engaging and interesting. It had applications for future everyday use.
- I enjoyed the lab
- I thought this lab was engaging. However, the directions were confusing and three people per group was too crowded.
- I wasn't really engaged in the lab but mainly because electric/sensors aren't really my cup of tea. But it would be very cool for someone who finds that interesting.