***EE 491 WEEKLY REPORT 9 Date: 11/1/16-11/7/16***

***Group number: 24***

***Project title: Ultrasound Water Purification***

***Client &/Advisor: Prof Bigelow***

***Team Members/Role:***

***Jacob Bernhard/Team leader***

***Yuhao Fu/Team Communication Leader***

***Parker Oltrogge/Team Webmaster***

***Subin Mao/Team Key Concept Holder***

***Xiyuan Wang/Team member***

***Tao Wu/ Team member***

* **Weekly Summary**

For this week, we two groups are working on our own part of this project. The member of purification system, we basically worked on the purification device design and BSL-1 bio-contaminant culture. Since we had a meeting with advisor this week, he told us some experience when he was working on the ultrasound water purification device. We have a pretty solid idea of how the purification device should be designed, and we will attached the solidwork design graph into the design document. For the testing group, we mainly searched for some information about necessary standards for potable water, based on those criteria, we would find corresponding sensors to test them. From the meeting with our advisor, we got some ideas about what kind of sensor we should use and how to get them. After the meeting, we found a doable circuit diagram for the ph sensor.

* **Past week accomplishments (please describe as what was done, by whom, when)**
* Jacob Bernhard: I figured out the testing methods for the cloirfil, also drafting the design document/solidworks design.
* Yuhao Fu: I developed the draft design of water purification device, and then work with partners to make it in solidwork.
* Parker Oltrogge: Worked on web page design
* Subin Mao: figured out what kinds of sensor are necessary for testing part, found suitable circuit diagram for ph sensor.
* Xiyuan Wang: searched relevant information about what sensors should we use for testing water quality.
* Tao Wu: figure out what we need to do during the next week. design of our purification system is the first thing. I tried to sketch the suitable version of the device.
* **Pending issues**
* Jacob Bernhard: Currently trying to find a suitable membrane to work with the purification device.
* Yuhao Fu: we are still doing research about BSL-1 bio-contaminant. We are thinking about to culture amoeba as the bacterial for the experiment, but we might need to take some safety training.
* Parker Oltrogge: I am struggling with web design. I may have it done by next week
* Subin Mao: too many standards for the potable water, not sure what standards we have to utilize
* Xiyuan Wang: We have not decided a best suitable standard of the quality for the water after purification.
* Tao Wu: now we focus on kill amoeba in the water. however, how to observe if amoeba is killed in the water is the problem we faced. need to find more information about this.
* **Individual contributions**

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| --- | --- | --- | --- |
| **NAME** | **Individual Contributions** | **Hours this week** | **HOURS**  **cumulative** |
| **Jacob Bernhard** |  | 4 | 28 |
| **Yuhao**  **Fu** | come up ideas for our design. tried to find information to figure out how to determine amoebas in the water | 5.5 | 29.5 |
| **Parker Oltrogge** | Worked on webpage design | 4 | 19.5 |
| **Subin Mao** | did research on sensors for testing part | 3 | 26.5 |
| **Xiyuan Wang** | searched relevant information about what sensors should we use for testing water quality. | 3 | 26 |
| **Tao**  **Wu** | come up ideas for our design. tried to find information to figure out how to determine amoebas in the water | 5.25 | 28.25 |

* **Comments and extended discussion**

From the last week’s meeting, we are feeling that we should get more prepared for meeting with advisor. Rather than updating our progress, we should get more experience from him since he has worked on the similar project before.

* **Plan for coming week**
* Jacob Bernhard: Finish the Design Document, and work on getting the draft in working order. This way we can send it to a machinist to get the first design cut.
* Yuhao Fu: I will be developing the draft design on purification device and doing more research on BSL-1 bio-contaminant.
* Parker Oltrogge: Gonna dig even harder on webpage.
* Subin Mao: keep looking for the suitable standards for potable water, hopefully, it can be done by next week.
* Xiyuan Wang: Keep searching about the information of water quality part.
* Tao Wu: try to have a rough design in the solidworks. find more information about how to determine amoebas in the water. besides, try to find more other bacterias we can culture and kill in the water.
* **Summary of weekly advisor meeting**

Here is the question we asked during the meeting

* culture ameba

we need to figure out how many ameba has been killed after we applied the ultrasound device and how many left in the water. From the biologist, we got to know that amoeba usually stick all together. therefore, it will be challenge to detect or observe the amoeba in the water.

it is said we could use microscope to observe the amoeba in the water. however, are we going to see both alive and dead amoeba in the water or all the bacteria has been shredded by the ultrasound wave.

* design purification device

For the design purification device, it is hard to create a switch to control floating water. we were told to use “solenoid mcmaster valve” to control the floating water

* Sensors

For the water quality testing part, there are variety sensors that we can applied. we decided to use a PH sensor to be designed and implemented by the testing team.