Final Bonus Videos Report
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YouTube Video Link	What have you learned from the video?	What have made you confused?	Zoom recording link
Subwoofers, Woofers, and Tweeters as Fast As Possible - YouTube	I learned that tweeters typically cover the 2000-20000 Hz range. I also learned that what separates each of these types of speakers is size. Sound quality can depend on whether the frequencies being supplied to a speaker are best for the size of the speaker. In addition, I saw that the bass speaker is typically held in a separate compartment to help with sound. **This is overall helpful for Phase 2 because it gives me a broad understanding of how important the filters applied are to how good the output sound is.**	The video says that a bass speaker usually has a separate power source. Is that necessary for our project?	https://youtu.be/DnAHL9WPEII
TDA2030 Class AB Amplifier IC (youtube.com)	This video was very helpful. I learned how different connections effect the output sound. For example, I learned which resistor helps with stability. I also learned how the diode connections help with voltage spikes. Those diodes were something that I saw on some other circuits and was wondering what they do. I also saw which capacitors effect cutoff frequencies and gain. I learned that the resistance of the speaker also plays a role in the output sound. **This video was extremely helpful for phase 2 because it gave me a way better understanding of what some of the connections made do and why they are beneficial.**	Some questions I have are just based on some of the terms he used. Like what is input biasing? What does he mean by cause oscillations?	https://youtu.be/OPXRv6mivm0
Decoupling Capacitors - And why they are	In this video, I learned that adding a load can drastically increase noise of input source AND output source. Since the input is affected,	One question I had was why do two parallel capacitors instead of one. This	https://youtu.be/RwyFiSCEpfY

important (youtube.com)	everything else is affected. Therefore, I saw how decoupling capacitors can be very critical to the output sound of a speaker. I also learned that there are several techniques that can be used to help eliminate electrical noise. These include shielding, filtering, differential signaling, grounding, isolation, surge protection, and ground loop elimination. **This video is helpful for Phase 2 because it showed how to test where noise is coming from and how to eliminate it.**	was answered in the video with him explaining that one filters out low frequency noise while the other filters out high frequency noise. I also didn't totally understand some of the other techniques mentioned to help eliminate noise.	
Passive RC low pass filter tutorial! (youtube.com)	I learned that a low pass filter can be implemented into a circuit just by putting a resistor and a capacitor in series. This is because the voltage on a capacitor cannot instantaneously change. So, when the resistor slows the charging of the capacitor, the output voltage is not able to follow the sudden changes in input voltage, and therefore higher frequencies get filtered out. I also learned that it is best to choose R and then let the cutoff frequency equation solve for the best value of C. **This video helped a lot with how to decide what values to use for the filters that will be applied to each speaker for Phase 2.**	One question I had was that if the cutoff frequency is more of a gradual cutoff, should I choose my cutoff frequency with that in mind ?	https://youtu.be/JsJcgSAJRrA
DIY Deep bass and Treble Volume controller-How to make heavy bass and treble for diy amplifier (youtube.com)	In this video I learned how to make a bass and treble volume controller. It is very simple yet very helpful. I saw that the output of this could be connected to two different sized speakers. **This video will be helpful for Phase 2 to control the volume, bass, and treble for each speaker box we have made.**	Nothing in this video was confusing. It is a very simple circuit.	https://youtu.be/ejN8fVOHlEY

Best Stuffing for Speakers Tested - Unexpected Results (youtube.com)	In this video, I learned that fiberglass or rockwool are good options for stuffing the speaker box to help the sound. **This is very helpful for installing our speakers for Phase 2.**	Something I am confused about is if this is only helpful for bass speakers. I also am questioning that if there is a design not like the video, with a wall, if we can stuff it how he did.	https://youtu.be/Xhm4TksajV8 **This video cutoff about halfway through but I had already reached the 40 minutes**

Conclusions of the most significant learning from these videos

Overall, I have learned a lot from these videos. I learned the basic of the different kind of op-amps and understand their differences better. I also learned how different capacitors, resistors, or diodes can be implemented into a circuit to complete different things. This just gave me a overall better understanding of a lot of circuit designs I see. I learned the function and importance of decoupling capacitors. In addition, knowledge on low pass filters and how to properly implement them was gained. Finally, I learned how to make a simple bass and treble volume control and some good speaker box stuffing options. All of these learnings will be very helpful for the completion of Phase 2.