SETTING UP MULTI-AUDIO OUTPUT FOR ZOOM

Setup Guide by
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READ ME FIRST:
The following document is a setup guide for streaming your 2 external microphones and/or prerecorded music directly into Zoom for free. This is particularly useful for:

- teachers working with accompanists performing in same physical location
- those teaching live percussive dance forms like tap who want to mic both their voice and their percussive elements.

As with most things free, this setup is a bit complex. It is a 7-step process that requires two external downloads and some familiarity with setting up your computer audio input/output.

The following setup was created and tested on a MacBook Pro using the Mojave OS. If you are using an older Mac operating system, you may run into issues. I am happy to help troubleshoot to the best of my ability, but I can't guarantee a solution. If you look at this document and think to yourself, "nope," that's A-Okay. I strongly recommend looking for my Facebook post on the "Dance Professors Online Transition Group" where I make some Zoom audio settings suggestions that can go a long way to improving your audio.

Looking for an external wireless headset that's compatible with macOS? I am using this Kimafun microphone, and it's working quite well. There may be cheaper options, but make sure you double check that it works with your operating system. Not all microphones are cross-platform.

Questions/Issues?
Email me at - jessicarajko@wayne.edu

STEP 1: Download Soundflower
https://github.com/mattingalls/Soundflower/releases

To download, scroll down and click on the .dmg file:

What is Soundflower?
Soundflower lets you create a virtual audio output device that can also act as an input.
For us, it helps us route multiple audio outputs to a single input, which is a great asset
when you need music and an external microphone to go to one place (like Zoom).

Using GitHub:
If you've never used github before, it's an online repository for people to share and edit
code. Soundflower used to have a formal app, but it's no longer supported. Matt Ingalls
made this kernel extension so that people could access the functionality that
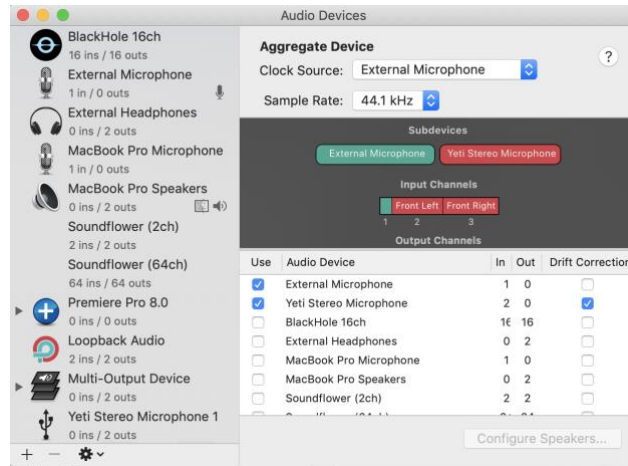Soundflower provided.

Installing Soundflower:
Please see Matt's instructions for installing Soundflower posted on the GitHub website.
There are a couple extra install steps that he walks you through.

STEP 2: Setup Your Soundflower Audio

Create an Aggregate Device

- Open Audio MIDI Setup: You can find it by going to /Applications/Utilities OR search your hard drive for "Audio MIDI Setup." Once open, it looks like this:

- Click the '+' button in the bottom left corner and select "Create Aggregate Device"
- In the panel that appears on the right, select your two external microphones.

  You can see how I setup my aggregate device in the screenshot above using an external headset and a USB mic.

STEP 3: Download Max 8
https://cycling74.com/downloads

- Once you've downloaded Max 8, follow the install instructions. Be patient, it can take a while. Max 8 is a really powerful program, so the install is on the larger side. Make sure you have some free space on your hard drive.

What is Max 8?
Max is a visual programming language for music and multimedia. Media artists use it to create all kinds of digital music and visual art. It's a really powerful tool, but for our needs, you won't have to make anything.
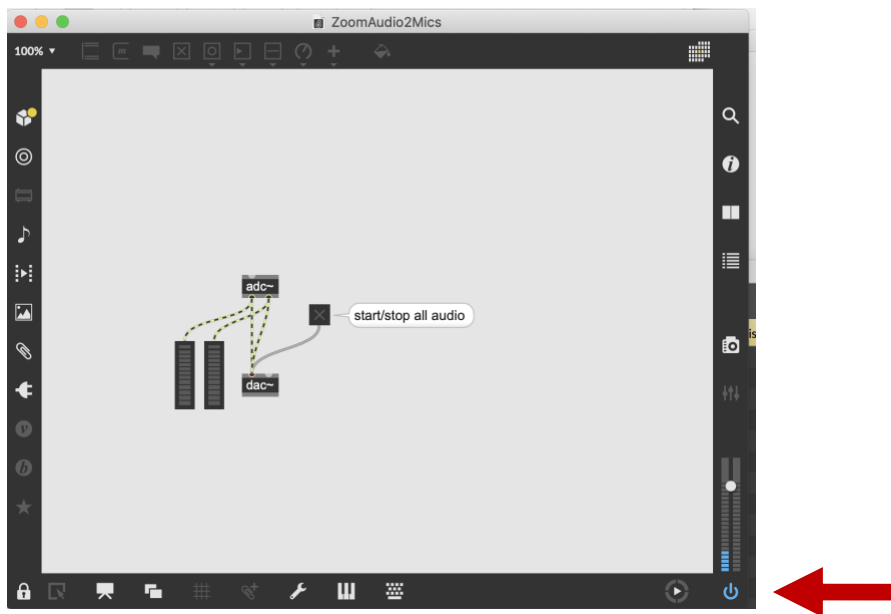
Do I have to pay for it?
No. If you've never installed Max on your computer before, you'll get a 30-day free trial. After that any programs (or "patches" as they're called in Max) you have will automatically run in "runtime" mode. This means you can run existing programs, but you can't edit them. For your needs, editing is completely unnecessary.

STEP 4: Download and Open ZoomAudio2Mics.maxpat
https://github.com/jessicarajko/ZoomAudio

- Scroll down to where it says ZoomAudio2Mics.maxpat.zip. Click on it and then click on "Download."

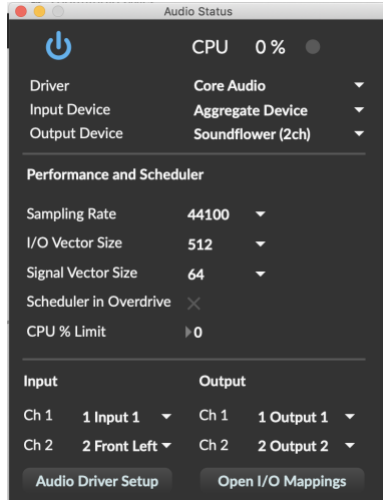- Open ZoomAudio2Mics.maxpat. It should look like this.

- Turn on the power button in the bottom right corner of the screen so that it's blue as it is in the screenshot above.

STEP 5: Setup Max 8 Audio Status

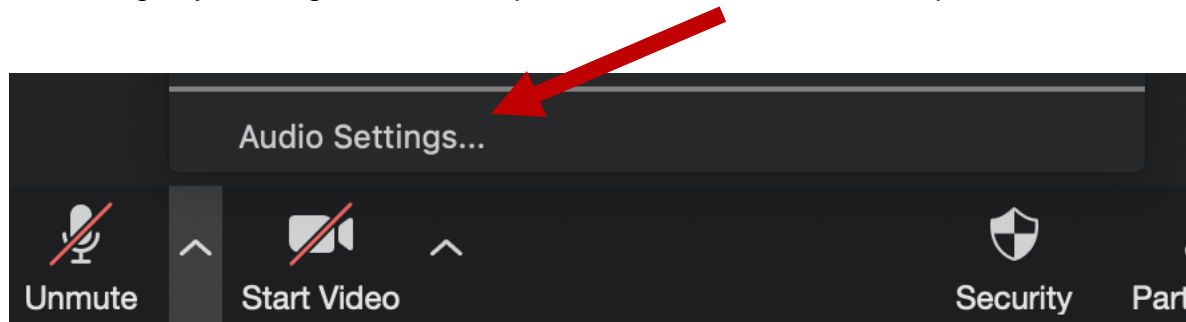- While still in Max 8, look at the top bar and find "Options." Click on it and then select "Audio Status."

- At the top of the window, change your input to "Aggregate Device" and your output to "Soundflower (2ch). This integrates both your external microphones into a single channel routed through Soundflower.
- Close the "Audio Status" window, but keep Max 8 open. You can minimize or hide it at this point.
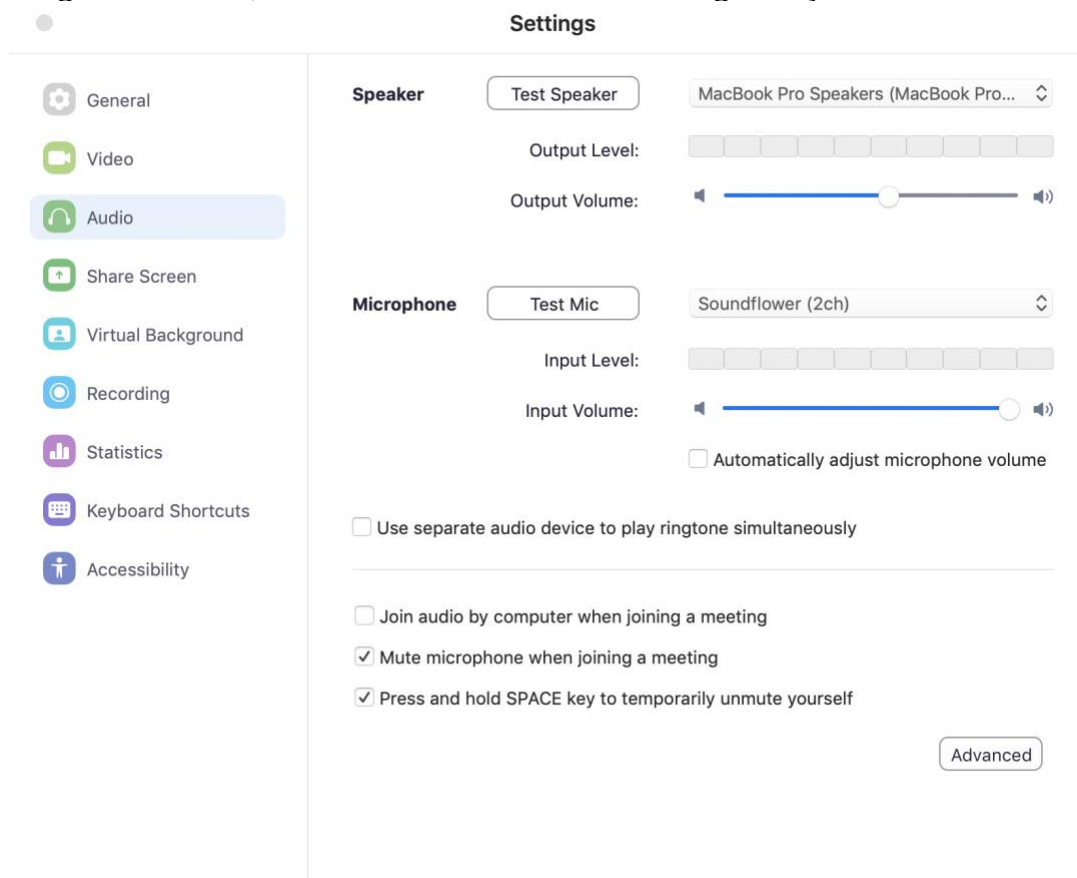

- Once the audio settings are arranged in Max 8 (see next step), then all you should have to do is open this file and turn on the audio by clicking the power button. To test, you must have your external microphones hooked up to your computer. Try speaking into the microphones. You should see the left bar light up as one mic and the right bar light up as the other mic.

STEP 6: Configure Your Zoom Audio Input/Output

- Open Zoom and then open your "Audio Settings" You can access your audio settings by clicking on the little upward arrow next to the microphone.

- For your sound Speaker, select whatever calls your computer speakers, for example "Built-in Output," or in my case "MacBook Pro Speakers" (see below)
- For your sound Input, select "Soundflower (2ch)"
- You can test your audio setup by clicking on the "Test Mic" button. It will allow you to record a few seconds of audio and automatically play it back. Try speaking into your microphones and playing music at the same time. You should be able to hear both clearly. You may need to adjust your external microphone audio settings to find a good balance, but I've had luck without needing to adjust.

STEP 7: Routing Prerecorded Music Directly into Zoom (Optional)

This step is only required for those who want to include prerecorded music in their class:

Once you are in a Zoom meeting:
- Click on the "Share Screen" icon (not the arrow next to it).
- Click on the "Advanced" tab.
- Click "Music or Computer Sound Only."

This routes only your music through the share screen feature of Zoom. You won't be able to test your audio, but you can always ask students if the levels are okay.

Setting Up for Each Class

Once you've got all your settings organized, you should be good; however, that doesn't mean you won't want to change settings back for a meeting, listening to music on your own, etc. Each time you go to teach class I suggest following these steps:

1. Plug in your external mics and turn them on.
2. Open Max 8 and check to make sure you see your volume meters moving when you speak into your external mics.
3. **KEEP MAX 8 OPEN!!** Don't close Max 8. Minimize it and keep it running while you teach.
4. Make sure your Zoom audio settings are as follows:
   - Speaker → computer speakers (ex. MacBook Pro Speakers)
   - Microphone → soundflower (2ch)
5. Run a microphone test, which records a small audio sample and plays it back for you. You can do this to check your external mic and music playback audio levels.

If anything is not working, come back to this guide and make sure your settings match the screenshots. Once you get used to this process, you should only need an extra 5 minutes to setup.

That's it!!!