A Basic Guide to the Tools, Techniques, and Procedures of Recording Yourself at Home

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Assembled by NEC Recording and Performance Technology Services (RPTS)

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Have questions? Want advice? Starved for human contact? We're here to help! RPTS is holding open office hours from 10am-1pm and 4pm-7pm every weekday. Feel free to join us on Microsoft Teams at the link below if you have any questions! Your call will be answered by one of our student workers, who can then bring in a staff engineer to offer detailed guidance and suggestions.

Join RPTS office hours

Alternatively, feel free to reach us by email at rpts@necmusic.edu, and one of our staff engineers will address your question as quickly as possible.

Recording Yourself: Technology Options

There are a number of fairly straightforward ways for you to record yourself playing your part in a bigger project. This guide will break these up into three categories, all of which are completely viable – recording with your phone, recording with your computer, and recording with a standalone camera or recorder. All will cover both audio and video options.

Note on Audio vs Video Recordings: It is quite easy for us to extract the audio out of a video and use it as an audio-only recording. If one of the video-based methods below seems like the easiest way to record, just let us know it's supposed to be audio only and we'll take care of the conversion.

How to Keep Recordings in Sync: For projects like this, it's really important that everyone plays exactly in time so all the individual parts can be lined up later. To that end, everyone should be listening to either a click track or a backing track of some sort to establish time. Since this should be silent in the recording, you should wear headphones or earbuds so you can hear the click while recording. Depending on your setup, you may want to use two different devices (e.g. run the click on your phone to your headphones and record on your computer, or vice versa). If you're the first person in your group to record, you have the option of not playing along to a click, but know that, in that case, your pacing and tempo will be the guide for the rest of the group, as they'll all have to play along to your recording instead of a click. They may have to listen to your performance a number of times in order to accurately match it. *Please note* – every player must do a verbal countoff so that we know where to start each individual part in the mix.

Recording with your Phone – Video:
(Note: This guide has been written with iPhones in mind, but these solutions could be adapted to any smartphone.)
1. Set your phone up in front of you and slightly to your side, so it has a good view of you, but you're not performing right into it. The built-in mic automatically adjusts its volume, but will likely sound better if it's slightly off-angle – setup is further explained in the microphone placement section of this document. Set up the camera in LANDSCAPE mode (i.e. "side to side so the image is wide") – this will make our video editors much happier ☺
2. Record a video of you performing using the camera app (start the recording first, then the click/backing track). Once you have a take that you're happy with, we recommend watching the video with headphones to ensure you're happy with both the performance and the recording.
3. There are a couple of options for sharing/transferring the recording to your computer to upload to Neo. Click the ⬆ (share) icon in the lower left corner to access them:
    a. If you have a Mac, the simplest way is to AirDrop them to your computer. Tap AirDrop (see below screenshot) and then select your Mac.
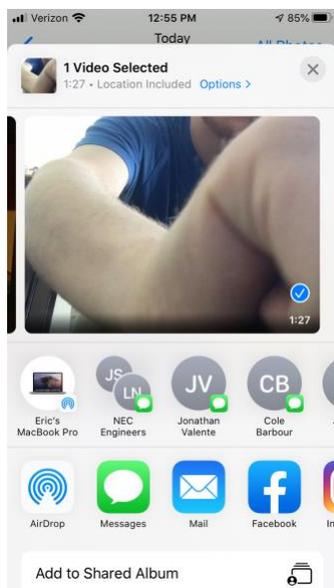
b. Use the Photos app on your Mac to transfer the video like you would other photos/videos on your phone. Then drag the video to your desktop (or some other location) before uploading.

c. Use cloud storage like Dropbox, Google Drive, or OneDrive. From the same sharing screen, scroll to the right in the row with apps and tap "More," then select the app you'd like you use. If uploading to Neo, you'll need to download it to your computer before uploading it.

Note: Do NOT try to use text or email to transfer the video.

Recording with your Phone – Audio:

1. Set your phone up in front of you and slightly to your side. The built-in mic automatically adjusts its volume but will likely sound better if it's slightly off-angle (see the section on microphone placement for more information here). The microphone is on the bottom of the phone near the charging port, so make sure that area isn't covered up.

2. Open the Voice Memos app and use it to record your piece. Listen back with headphones to ensure you're happy with both the performance and the recording.

3. Select the Voice Memo you want to use and tap the three dots, then tap share. Use one of the methods discussed in the previous section (see above) to upload to cloud storage or transfer the file to your computer if uploading to Neo.

Using External Mics with your Phone:

There are a number of external mics you can buy to use with your phone (Zoom, Shure, etc.). Most plug into the charging port. They're not necessary, but if you already have one, it can be a great way to step up the audio quality of your recordings. Some of these come with their own apps that give you more control over the technical aspects of the recording. Since there are a number of different mics and apps, this guide won't go into detail on exactly how to use them or what specific settings to use, but feel free to reach out to RPTS (rpts@necmusic.edu) if you have questions or would like some guidance. We'd be happy to help!

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Recording with your Computer – Video
(Note: as with the phone section, this has been written with Mac users in mind, but these solutions could easily be carried over to equivalent software in a Windows environment.)

1. Open the Photo Booth app on your computer. This app is built-in to all Macs and is by far the easiest way to record video. You should see yourself immediately. If not, especially if you're using an external webcam, click the "Camera" menu at the top and make sure the right camera source is selected. If you're using the built-in microphone on your computer for the audio, skip to step 3.

2. IF USING AN EXTERNAL MICROPHONE (USB, audio interface, etc): Open the System Preferences app, then click Sound. Navigate to the Input tab and select the mic you're using from the list (see below).
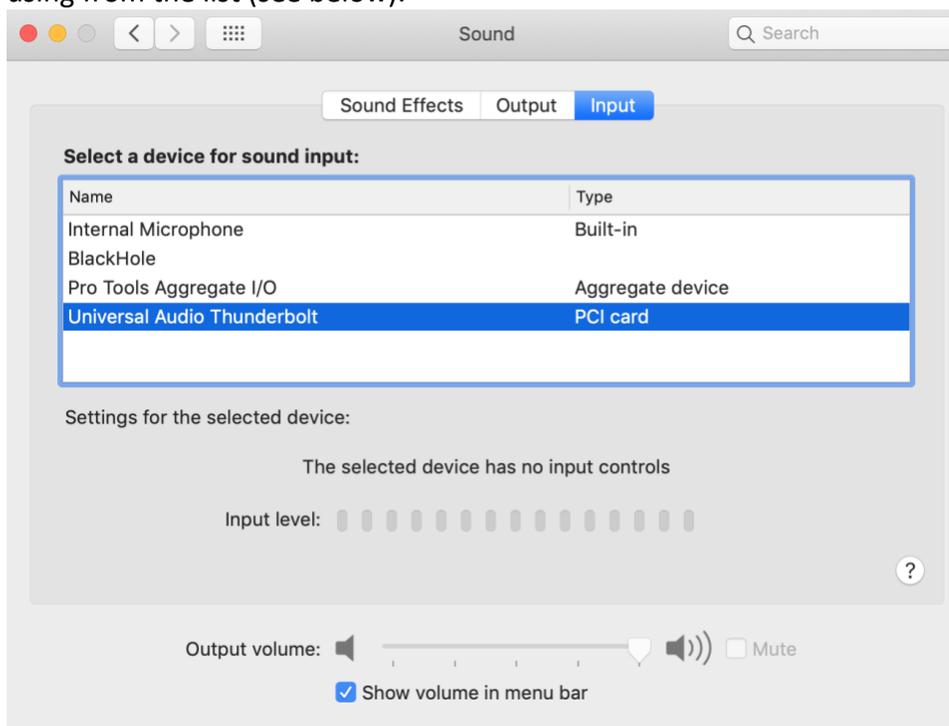
Select the mic/interface you're using for audio from this list. Your options will likely be different; in my situation, I'm using my Universal Audio interface and an external mic I've connected to it. If using a USB mic, it should show up on this list.

Make sure the level is set properly. Depending on what type of mic you're using, these settings could either be in the Sound window shown above, a physical knob on the mic/interface itself, or a control in the software for your specific equipment. Set the level so that the level meter is coming to between half and 2/3 of the way up without hitting the very top; if it sounds distorted or crunchy, turn it down. See the section on mic placement for more information on this topic.

3. Click the Video icon ⊞ ☐ ▤ (right-most icon in the lower left corner) in Photo Booth. Position the computer so the camera angle looks good and click the red button to record your video. It will count down from three before starting your recording.

4. Don't forget to start the click track and do your countoff. Then, make your recording. When you're done, press the red button to stop recording.

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5. Click on the recording you just made in the lower right portion of the window. Watch the video with headphones on to make sure you're happy with it, then go to File > Export. Save the video somewhere easy to find.
6. Upload the video file to Neo or whatever cloud storage service you're using to share it.

Record with your Computer – Audio [Advanced]:
While the Photo Booth method is a perfectly acceptable way to record (again, it's quite easy for us to extract the audio), you also have the option of using a standalone audio recording program to record just audio if that's how you'd prefer to work, especially if you're using an external microphone or audio interface and want more control. While there are a number of programs that can do this sort of work, this guide will focus on Garageband. For PC users, Audacity is free and provides similar functionality. Any DAW (Logic, Pro Tools, Reaper, etc.) would have similar functionality.

- If it's not already on your computer, download and install the free Garageband app from the app store.
- Open Garageband and choose "Empty Project" from the initial window. It will create a project and prompt you to add an audio track.
- Configure your options on the window below:
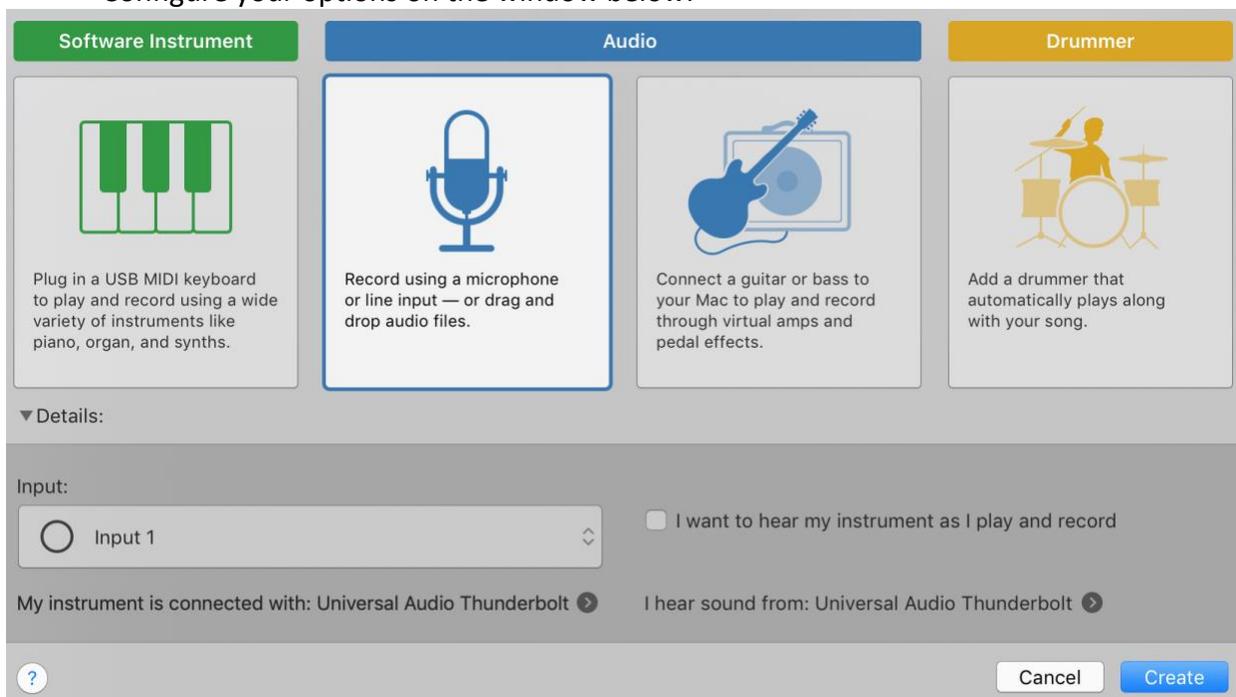
Select the microphone option from among the four boxes, then configure your settings on the bottom. Click the arrows next to the device names to change the input and output devices, and be sure to select the correct input for your microphone. If using the built-in mic on your computer, select Input 1 from the dropdown.

- Click Create. An audio track labeled "Audio 1" shows up in your session. Rename it to be your instrument, the piece you're recording, or whatever you'd like to call it.
- Save the session! You don't want to lose your progress!

- Optional: If you'd like to use the same Garageband session for the click track (instead of, for example, playing it on your phone), go to Track > New Track and create another audio track. Then, navigate to the audio file on your computer for your click/backing track and drag it into the track you just created in Garageband. Even though Garageband can create its own click track, it is important to use the one distributed to your group to make sure everyone is recording to the same click.
- Use this panel to record and control your settings:

From here, you can control the recording, set the tempo & time signature, and configure the built-in click track. Unless you're the one creating a click track for the rest of your group, **turn OFF the built-in click** (unclick the two buttons in purple above) so you don't hear two different click tracks. If you'd rather see minutes and seconds instead of bars and beats, click the down arrow to the right of the time signature to change it.

- Click the blank track you first created to select it (the one without the imported click) – this tells Garageband to record to this track instead of overwriting your click.
- Use the buttons in the panel above to make your recording. Don't forget to verbally count off in coordination with your group to help us line up the recordings later.
- When you're done, MUTE the click track using this button at the left side of the track (right under the title) so the click isn't audible in your finished recording.
- Listen once more to make sure you're only hearing what you want to submit – what you hear is what will be in your finished audio file. Mute or delete anything you don't want.
- Go to Share > Export Song to Disk. Name the file with the last name of your ensemble coach, your last name, and your instrument/part (e.g. "Bergonzi – Engler – Trumpet") and choose where you would like to save it. Choose WAVE from the four format options at the bottom, then click Export.
- Find the exported file and upload it to Neo or whatever cloud storage service you're using to share it.

Recording with a Standalone Camera or Audio Recorder:

If you have a camcorder or audio recorder (Zoom, Tascam, etc.), these are also great devices to use to record yourself. Since these devices vary quite a bit, this guide won't go into detail on exactly how to use them, but the principles remain the same:

- Make sure the camera and/or mics are well-placed
- Make sure the audio levels are healthy but not overloading. Make sure that features like "auto-limiting" are turned off.
- Make sure you can hear the click track (in your headphones!), but that it won't be audible on the recording. Please verbally count off so we can line your part up later.
- Transfer your finished file to the computer when you're done and upload it to Neo or whatever cloud storage service you're using to share it.
- As always, feel free to reach out to RPTS (rpts@necmusic.edu) if you have questions or want individual guidance on how to get the best recording, even with your own gear.

Recording Yourself: How to Set Up and Place your Microphones

There are a few variables to keep in mind when recording at home, including the type of microphone you're using and where to place it. While there is no single technique that will work for all circumstances, and you may need to experiment to find what sounds best to you, these tips will help you get started.

1. The room
The first thing to consider has nothing to do with the technology; it's the space where you will be recording. Try and find the quietest room in the house, and turn off anything electronic that might be creating background noise, including certain types of lights. (TIP: Stay out of the kitchen. Your fridge is louder than you think!) Let anyone else in the house know that you'll be recording, so they can give you a few minutes of quiet, and close your windows to keep out as much street noise as possible.

2. The microphone
There are a wide variety of microphones available, but most people don't have access to more than one or two at home. This will help you get the most out of whatever tool is available to you.

Laptop microphone:
The built-in mic on a laptop was designed for speech, but can deliver an acceptable sound when recording an instrument. Most laptop mics are positioned near the keyboard, and some newer laptops use an array of several separate mics. On some Macbook Air models, the microphones may be on the side edge, and on some Windows laptops, they may be located at the top of the screen near the camera.

- STRINGS: For instruments in the violin family, stand or sit about 2 feet away from the keyboard. If standing, try to position the laptop roughly at chest height if you can. Guitars, mandolins, and other plucked instruments should be closer.
- WOODWINDS: Similar to strings, stand or sit about 2 feet away from the keyboard.
- BRASS: Stand or sit at least 3 feet away. Point your instrument slightly away from the laptop. An off-angle position will be less likely to overload the microphone.
- PIANO: Position the laptop about 3-4 feet away from the instrument, as though the computer were an audience. If you are capturing video as well, make sure your hands are visible to the camera.
- VOICE (classical): Stand roughly 3 feet away from the laptop. You may want to sing slightly off-angle to the microphone.
- VOICE (jazz/CI): Stand about a foot away from the microphone. You may want to place your laptop on a tall piece of furniture to get it closer to your mouth.

If you are playing while standing, try to maintain a consistent distance from the microphone. As you move, your sound will change. It may help to mark a spot on the floor with tape, so you can remain in the same position.

There are audio settings you can adjust on your computer to improve the sound quality. On a Mac, open your System Preferences, and click on the Sound icon. From here you can adjust the sensitivity of the microphone. In this window there is also a checkbox labelled "Use ambient noise reduction." This is useful for filtering out background noise when on a FaceTime call, but the processing involved may result in worse audio quality for music.
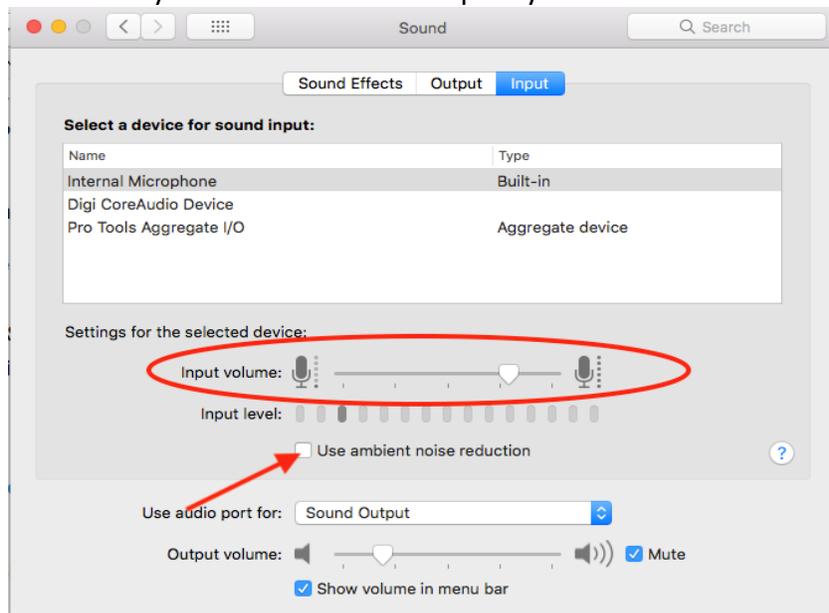
Phone or tablet microphone:

iPhones and iPads have a standard recording app called Voice Memos. Android devices vary by manufacturer and carrier, but most should come with a pre-installed recording app as well. To use one of these devices for audio-only recording, make sure to point the microphone towards you, and follow the suggestions above for positioning. The mic is located next to the charging port, so make sure nothing is covering it. If your phone is in a case, you may need to remove it. If you are recording video as well, use your device's camera app and make sure you are entirely visible. If you're using a music stand, you may want to place the phone slightly to the side.

Your recording app may have some settings you can change to improve the sound. On an iPhone, go into your Settings, and select Voice Memos (see screenshot on next page). From there, you can change your Audio Quality from Compressed to Lossless. This will create a larger file, so make sure you have a little extra storage space on your phone. The sensitivity of the microphone adjusts automatically, so there is not a control for that like there is on a laptop.

External USB microphone (desktop):

There are several different kinds of external microphones you can connect to your computer over USB without an additional interface. Some of these come with a desktop stand, or have one that is permanently attached to the microphone. These can sit right next to your laptop, and you can position yourself similarly to how you would for the built-in mic. The difference is that these mics are intended for music recording and will offer a big improvement in sound quality.

Some of these mics have several different pickup patterns that may also change the sound of your recording. A cardioid pattern will be most sensitive in front and drop off a bit on the sides, while an omnidirectional pattern will have relatively equal sensitivity on all sides. Depending on how well isolated your recording space is, you may get better results with one or the other. Listen and experiment!

Before you get started, you may need to change your audio preferences and your recording software to select your USB mic as the input source.

External USB microphone (on a stand):

This situation is where you will have the most flexibility in terms of placement. With a mic on a stand, you are only limited by the length of the cable that connects the mic to the computer.

- • STRINGS: For violins and violas, place the microphone about 2 feet away from the instrument, and about a foot above it, angled slightly downwards, so the mic points roughly at the bridge. For cello and double bass, place the mic at a similar distance, but adjust the height so the microphone is pointing between the bridge and the end of the neck. For guitar, place the mic about 1 foot away from the instrument, and point it towards where the neck meets the body.

- WOODWINDS: For clarinet, oboe, and bassoon, place the mic about 1-2 feet away, aimed towards the fingering holes about 1/3 of the length from the bell. For flute, the height of the microphone should be even with the instrument, and it should point halfway between the mouthpiece and the left hand. Try angling the mic towards your hands if you're hearing too much breath noise.
- BRASS: For trumpet and trombone, place the microphone at least 3 feet away from the instrument. The height should be a few inches above the height of the bell. For french horn, place the microphone behind you, facing towards the bell. For tuba, start with the microphone about 3 feet away, and 2 feet above the height of the bell.
- PIANO: If you have access to a grand piano, place the microphone 2-3 feet in front of the instrument, about 1 foot above the height of the case, and centered to the strings. If you're using an upright piano, open the lid and place the mic about 2 feet above, pointing straight down.
- VOICE (classical): Stand about 3 feet away from the microphone, and set its height a few inches above your head.
- VOICE (jazz/CI): Position the microphone about one foot away from you. The height should be roughly level with your mouth. Depending on the dynamics of your part, you may want to move back slightly for louder parts, and closer for quieter parts.

All of these suggestions are merely starting points. Your own situation may call for adjustments based on the room, your instrument, your playing style, and the piece. Give yourself some time to try things out and figure out what works best for you. There is no single correct way to make a recording! And again, feel free to drop in during office hours (see link on title page) or send the RPTS department an email if you have questions or want any advice. We're here to help!

Uploading and Sharing Your Recording

Where do I upload my recording?
- IF THIS IS A CLASS PROJECT: There should already be an assignment created in Neo. Use the instructions below to upload it, but be aware of file size limitations (see note below).
- IF THIS IS A PERSONAL/NON-CLASS PROJECT: Use a cloud-based storage service and email a link. All NEC students have access to Microsoft OneDrive, and we recommend this option, but you're also welcome to use Dropbox, Google Drive, etc. based on personal preference. Once it's uploaded, please email a link to rpts@necmusic.edu. Be sure to include the **ensemble name** and **piece name** in the subject of your email.

File size limits in Neo
Neo has a 100MB limit for students uploading files to assignments. If the file you are trying to upload is bigger than 100MB, upload the file to your NEC OneDrive or another cloud storage service and submit the link through the appropriate Neo assignment (see step 5 below).

Uploading to Neo:
1. When you have logged into your Neo, you should see your class as a panel. Once you click on that class, there will show a sidebar menu on the left-hand side. Select Assignments.
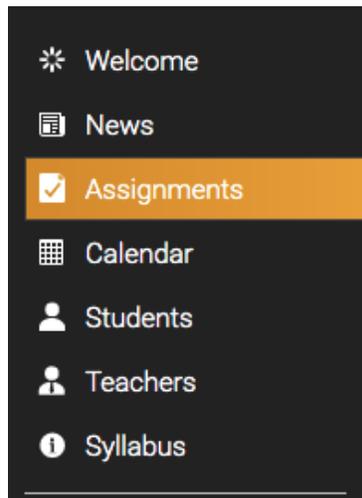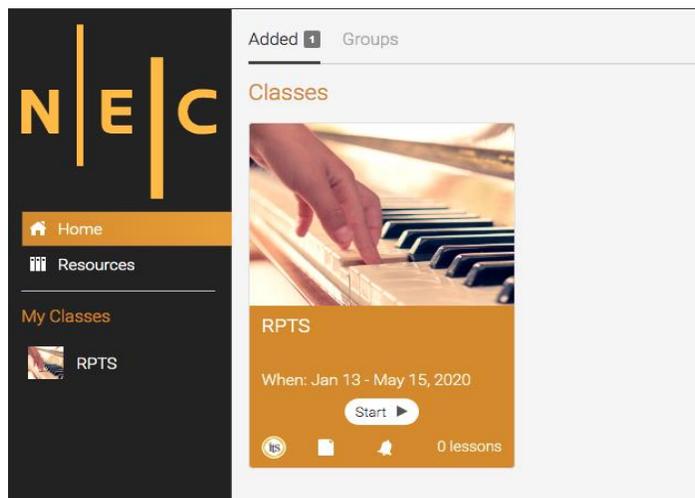
2. Once you have selected assignments, you should see your recording assignment which you will open [image on next page].
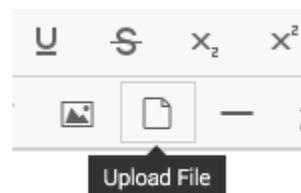
3. You will see "Instructions". This might include a click track or reference track. To download the track, click the link. This will open in a new window or browser tab based on your computer settings. Download your track.

4. Below the instructions, you will see Prepare Answer (below, left). This is where you will submit your recording. Select Prepare Answer.

5. If your file is under 100 MB, you can upload it by selecting the paper icon (above, right). If it is over 100 MB, please upload it to a cloud storage service of your choice (Dropbox, Google Drive, OneDrive, etc.) and copy and paste the link in the text box.

Good luck, and let us know if you have any questions!