

Purpose:

1. To educate basic users of Audacity in how to reduce background noise. Learners are assumed to already be using audacity, and should not require teaching of basic skills such as how to open, record, or save a track.

Main Steps:

1. Get Noise Profile
2. Reduce Noise
3. Tips and Troubleshooting

Learning Objectives:

1. **List** the tasks in the process by putting them in order with no errors.
2. **Explain** how the noise reduction adjustments work, and **identify** scenarios which require them to be adjusted.
3. By the end of this lesson, the learner will be able to **apply** the noise reduction effect in Audacity in order to reduce background, ambient, or otherwise unwanted noise in an audio recording.

Slide	Script	Visual	Notes
1	This is a tutorial on how to use the noise reduction effect in Audacity.	Rise-Intro	Introduce purpose
2	Why? It is not always possible to avoid background noise.	Slides	Application: why do you need noise reduction?

3	Constant, steady source of noise 1. Welcome. Today, you will learn how to use the noise reduction effect in Audacity. 2. It really is just a few simple steps, but first, let's orient ourselves in Audacity. 3. Here you can see I have an audio file open that has two tracks. We'll be looking at each track separately, so right now I only have Sample Audio Track #1 in expanded view. 4. Let's look closely at the audio track. The spikes indicate where someone is speaking, and the flat areas indicate silence. 5. However, if I zoom in on the flat area, we can see it actually isn't all that flat. This is indicative of background noise. (I silenced a half second of audio so you are reminded how flat the line is when there is no noise). In this case, the noise is coming from a constant, steady source of noise. I know this because the noise doesn't contain any peaks or valleys, it's just flat. 6. A quick listen will confirm the noise. 7. Now that you've identified the noise, you need to create a noise profile. 8. To create a noise profile, you first select a segment of the audio track that is just the background noise. You only need a fraction of a second of noise, but you should always select at least a few seconds if possible because it will make the noise reduction more effective. 9. Now, select the "effect" tab in the toolbar. 10. Scroll down to "noise reduction and select it. 11. Under Step #1, select "Get Noise Profile." 12. You now have a noise profile, and are ready to apply the effect.	Audacity in Slides	Demonstration of Creating a Noise Profile: Sample Audio Track #1
	1. Now that you have a noise profile, you are ready to apply the effect. 2. Now select the segment of audio you would like to apply the noise reduction effect to. In this case, it's the entire file. 3. Now, select "Effect" again, and "Noise Reduction" again. 4. In general, "noise reduction", "sensitivity", and "frequency smoothing" can be left at their default levels, but we'll discuss them later in this lesson under tips and troubleshooting. Be sure the button is		Demonstration of Applying Noise Reduction Effect: Sample Audio Track #1

	selected for Noise: Reduce. Select “OK” 5. You will see Audacity working, in this case it just took moments. Longer files might take a few minutes. 6. Looking at the modified audio track you can see that the line is much flatter now, and if we listen to the track, we don’t hear the noise. 7. You have now successfully applied the noise reduction effect.		
4	Intermittent Noise Source 1. Now we will look at a different audio track. This track contains intermittent background noises. 2. Let’s look closely at the audio track. The spikes indicate where someone is speaking, and the flat areas indicate silence. 5. However, if I zoom in on the flat area, we can see that intermittently throughout the track are small, but nevertheless present, peaks and valleys that indicate an additional, quiet noise source. 6. A quick listen will confirm the noise. 7. Now that you’ve identified the noise, the same steps apply as before, so now you need to create a noise profile. 8. To create a noise profile, you first select a segment of the audio track that is just the background noise. You only need a fraction of a second of noise, but you should always select at least a few seconds if possible because it will make the noise reduction more effective. In this case, because the noise is intermittent, you just need to take extra care that your noise profile is just noise. 9. Now, select the “effect” tab in the toolbar. 10. Scroll down to “noise reduction and select it. 11. Under Step #1, select “Get Noise Profile.” 12. You now have a noise profile, and are ready to apply the effect.	Audacity in Slides	Demonstration: Creating a Noise Profile: Audio Sample #2
	1. Now that you have a noise profile, you are ready to apply the effect. 2. Go ahead and select the segment of audio you would like to apply the noise reduction effect to. In this case, it’s the entire file. 3. Now, select “Effect” again, and “Noise Reduction” again. 4. In general, “noise reduction”, “sensitivity”, and “frequency smoothing” can be left at their default levels, but we’ll discuss them later in this lesson under tips and troubleshooting. Be sure the button is selected for Noise: Reduce. Select “OK” 5. You will see Audacity working, in this case it just took moments. Longer files might take a few minutes.		Demonstration: Applying the noise reduction effect: Audio Sample #2

	6. Looking at the modified audio track you can see that the line is much flatter now, and if we listen to the track, we don't hear the noise. 7. You have now successfully applied the noise reduction effect.		
5	Tips and Troubleshooting 1. Before Recording *Remove noise sources ahead of time. Don't underestimate quiet sources of noise such as air conditioning, your own computer, or a squeaky chair. *Your microphone will pick up everything and quiet noises seem louder once you notice them. *Do a sound check. Check your levels and do a test recording. 2. During Recording *Use a microphone screen to reduce breathing sounds on the microphone. *record different sources of sound separately (either at the same time but in different rooms, or at different times in the same room) and each in their own track. This will make noise reduction easier and more effective. 3. Post-Production: After Recording *Zoom in, and take the time to look closely at the entire track. In this way you will best be able to identify any noise. 4. Utilize the noise reduction effect. 5. If noise is not eliminated by the noise reduction effect, you may still be able to silence it. If the noise is isolated (not occurring simultaneously with good audio). Simply select the segment of the track containing the unwanted noise, and then select "CTRL+L" or the "Silence" tool.	Audacity in Slides	Tips and Troubleshooting: Adjusting the noise reduction tool and scenarios
6	Summary of steps.	Slides	Conclusion: summarize important details.
7	Explain how to access assessments and provide links.	Slides/Google Forms	Share assessments, independent practice.