

# AUDIO & VIDEO SERIES

*delivering multimedia content to students*

## editing audio with audacity

**Goals:** This document is a resource for people who would like to edit and export MP3s using Audacity. Information on downloading and installing necessary tools will be covered. Then, procedures for editing and exporting MP3s will be described. While some of the information is geared towards instructors looking to record podcasts, the tools, techniques and terminology are applicable for recording voice-overs for a video, sound effects, and music. test

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## digital audio properties

To work effectively with digital audio, it is important to understand some basic terminology and properties of digital audio. Understanding these terms will help in making informed decisions about how to compress digital audio for the web and streaming. The three basic properties of digital audio are: stereo, bit-depth and sample rate. The definitions below are partly taken from [whatis.techtarget.com](http://whatis.techtarget.com).

- [Channels](#)
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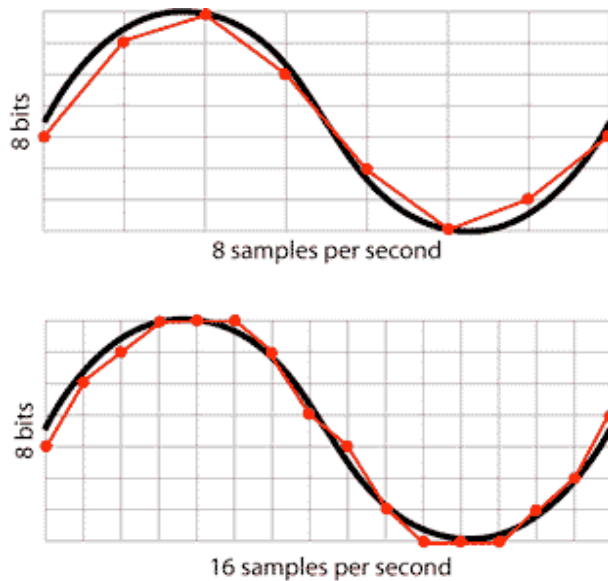
## channels

A stereo audio signal has two discreet channels of audio whereas a mono signal has only one. A stereo signal can be mixed down to a mono signal. An uncompressed stereo

digital audio file will be twice the size of a mono file.

## sample rate

Sample rate is the number of samples of a sound that are taken per second to represent the event digitally. The more samples taken per second, the more accurate the digital representation of the sound can be. For example, the current sample rate for CD-quality audio is 44,100 samples per second.

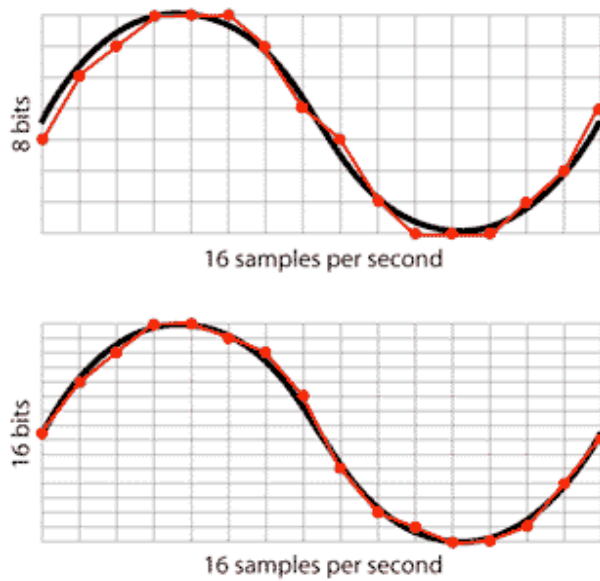


The more samples per second that are taken, the more accurate the digital representation is of the analog waveform. Each sample is really only a number that contains the amplitude value of a waveform measured over time. This brings us to bit-depth.

## bit depth

Bit depth defines how many bits are used to describe each of the samples taken from the sample rate (above). It describes the potential accuracy of a digital audio file. Higher bit depth audio will sound better than smaller bit-depth audio. 8 and 16-bit audio are currently the most common sample sizes. 8-bit audio takes up less hard drive space but is inherently noisier than 16 or 24 bit-depth audio. CD quality is 16-bit.

Bit depth is frequently encountered in specifications for hardware and in the specifications for what kind of digital audio a piece of software can capture and process.



## compression and codecs

Audio files should always be captured and edited at the highest bit-depth and sample rate available - usually 16-bit 44.1 kHz stereo audio on most consumer level hardware. However, once edited, it can be compressed using a CODEC (compression / decompression algorithm) to decrease the size of the file. This is how an uncompressed digital audio file is converted into a streaming audio file for the Web, as well.

## common audio formats

- **WAV** - A digital audio standard developed by Microsoft and IBM. One minute of uncompressed audio at CD quality (16-bit, 44.1 kHz stereo) requires about 10 MB of storage.
- **AIFF** - or "Audio Interchange File Format" - An audio file format developed by Apple Computer.
- **MP3** - MPEG-1 Audio Layer-3 - A common compressed audio format often used for sharing music across the web (both illegally and legally).
- **AAC** - Advanced Audio Coding - Used both for commercial DVDs and Apple's iTunes Music Store for purchased songs.
- **WMA** - Microsoft's Windows Media file format. Version 9 of Windows Media is the competitor to AAC for online music sales.

## downloading and installing audacity

There are many good sound editing applications available for the Macintosh and PC. We recommend Audacity because it is a free audio editing tool which can do just about everything the commercially available applications can!

**Platform:** Mac and PC

**Cost:** Free

**Download:** <http://audacity.sourceforge.net>

**Supported Audio Formats**

**Import:** WAV, AIF, AU, MP3, and Ogg Vorbis

**Export:** WAV, MP3, and Ogg Vorbis

## download audacity

1. Navigate to <http://audacity.sourceforge.net/>.
2. Click **Download Audacity** for Microsoft Windows or **Other downloads** to download onto a Mac operating system.
3. Choose appropriate link under **Recommended Download**.
4. Click on one of the host sites to download Audacity.
5. Click **Save** and note where the file is saved on your computer.

## install audacity

1. Locate **Audacity Setup file** on your computer.
2. Click on **Audacity Setup file** and choose **Run**.
3. Follow instructions on **Audacity Setup Wizard**.
4. Finish and **Launch** Audacity.

## download and install the mp3 encoder

In order to be able to export audio as an MP3 file in Audacity, you will need to download install an MP3 encoder.

### Windows

1. Download <http://www-users.york.ac.uk/~raa110/audacity/lame.html> the **LAME MP3 encoder** from <http://www-users.york.ac.uk/~raa110/audacity/lame.html>
2. Click on any link to start downloading the LAME MP3 encoder.
3. When you finish downloading, unzip and save the file **lame\_enc.dll** under **Program Files/Audacity**
4. The first time you try to export your project as an MP3 by clicking **File** then **Export as MP3**, Audacity will ask you where the **lame\_enc.dll** is. Browse to the **lame\_enc.dll** and click **OK**

### Mac OS 9 or X

1. Download the encoder from <http://spaghetticode.org/lame/>
2. Click the version of LameLib for your operating system.
3. When you finish downloading, use Stuffit Expander to extract the files.
4. Save the **LameLib** file in Applications/Audacity

5. The first time you try to export your project as an MP3 by clicking **File** then **Export as MP3**, Audacity will ask you where the **LameLib** file is. Browse to the **LameLib** and click **OK**.

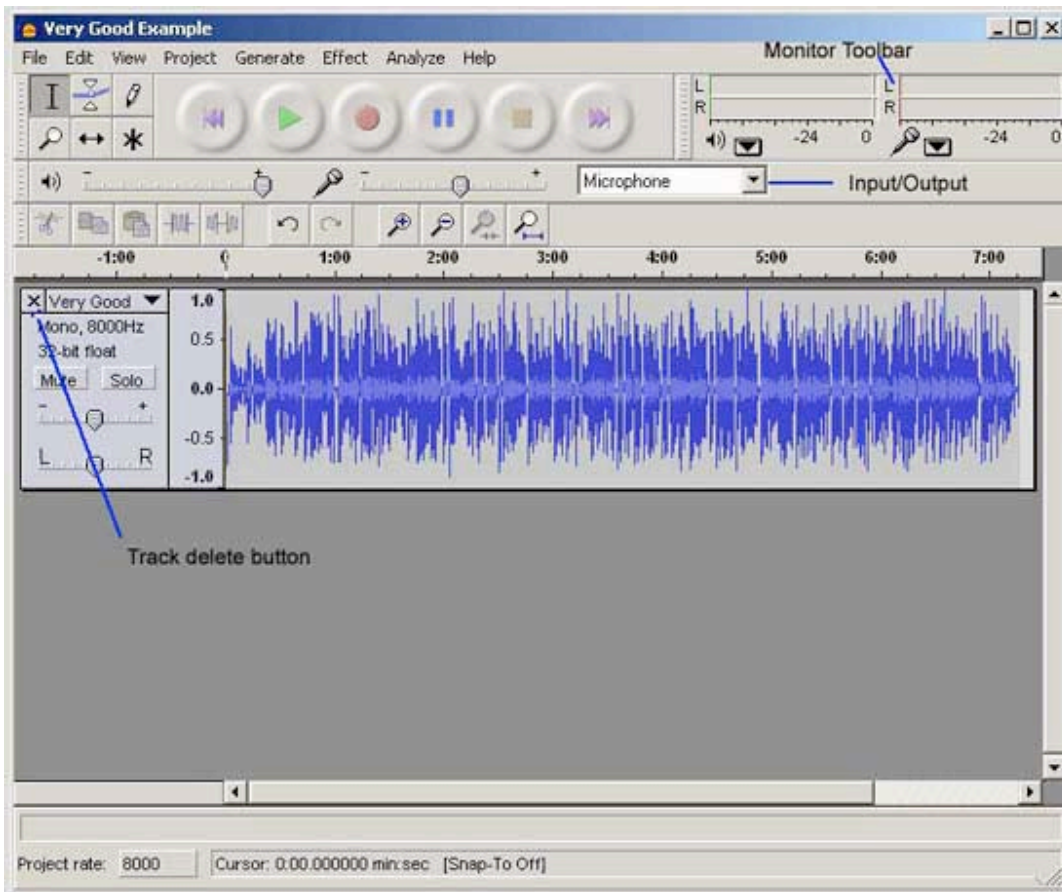
## audacity overview

### before you start

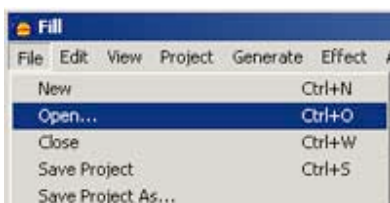
It always helps to take some time to plan out what you want to record before you sit down in front of the computer. Keep in mind that a lot of podcasts use a more informal tone so try not to worry about making mistakes while you are recording. If you make a big mistake you can always edit it out later! Consider creating a rough outline of what you want to talk about before you start recording to save yourself some frustration. Podcasts typically have the following format or structure:

- **Welcome Message** - Greet your listener and identify the name and purpose of your podcast.
- **Theme Music** - A short piece of music could help set the tone for your podcast.
- **Preview** - Tell listeners what to expect from your podcast.
- **Features** - The main content of the show.
- **Conclusion** - The closing of your podcast.

### the audacity interface



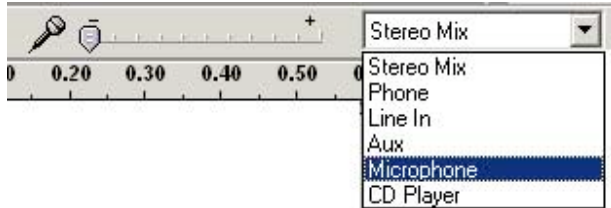
## opening an audio file



- To open an audio file, select Open from the File men.

## recording audio with audacity

### set up your input

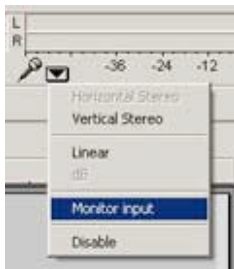






Your computer probably has multiple inputs for recording different sources. Two types of inputs that most computers have are a line-in and a microphone input. In this case we're recording a podcast so we'll use the microphone

input.

- on the Input/Output Toolbar, select microphone

### adjust your microphone volume level




1. On the Monitor Toolbar, click the down arrow next to the microphone. 
2. Select Monitor Input from the menu.
3. Adjust your Microphone Volume Level until the level meter is bouncing near the 0 db meter. 
4. Click the record button to start recording. 
5. Click the stop button to stop recording. 

## editing audio with audacity

You can use Audacity to cut out audio you don't want to keep, layer music and sound effects, and many other things.

### removing audio



The most common editing tool you'll use is the cut button.

1. Use the **Selection Tool**  to highlight the part of the track that you would like to

remove.





2. Click **Delete** or click the Cut button 

## other editing tools

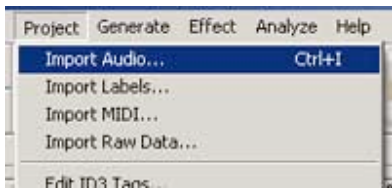
- **Select** - To edit your audio, first select the section of the audio you want to work on using the **Selection Tool**. 
- **Play** - To listen to the section of audio selected, click the **Play** button. 
- **Copy** - Copies data from the window to the clipboard.  
To copy a section of audio, select the section and choose Copy from the Edit menu
- **Paste** - Inserts the contents of the clipboard into the window at the current cursor position. If a selection exists in the data window, the pasted data replaces the current selection.  
To paste a selection of audio, choose Paste from the Edit menu.
- **Cut** - Deletes data from the window and copies it to the clipboard.  
To cut a section of audio, choose Cut from the Edit menu.
- **Delete (Clear)** - Deletes the data from the window, but does not copy it to the clipboard.  
To delete a section of audio, press Delete or Backspace on your your keyboard.
- **Trim / Crop** - Deletes all data in the window with the exception of the selection.  
To Trim a section of audio, select the section you want to keep and choose Trim from the Edit menu.
- **Silence** - Mutes the section of audio selected.  
To Mute a section, select the section you want to mute and choose Silence from the Edit menu.

## zooming

Zooming in and out can help you work with your audio files, particularly if your are working with very small or very large segments of audio.

- To Zoom in, click the Zoom In button  on the Edit Toolbar.
- To Zoom out, click the Zoom Out button  on the Edit Toolbar.
- Zoom to Selection  gives you a close-up of the selected audio.
- Zoom to entire project  show your project in its entirety.

## importing audio



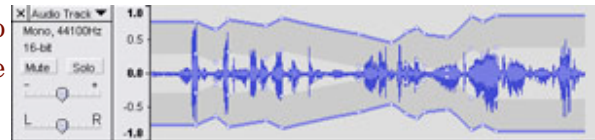
1. To import audio to an existing project, select Import Audio from the Project menu.
2. Navigate to the audio you want to add to your project.

## voice-over

To create a Voice Over, you will first add an additional track to your project. Select **New Audio Track** from the **Project** menu

Follow the procedures under Set Up Your Input in this tutorial to record your audio.

When you have both your background audio and your recording, you are ready to create the voice over.



1. Click the Envelope Tool
2. You will see blue and grey lines on your audio track. Click the blue line to make the audio quieter. Click the grey line to make the audio louder.
3. You can create control points by clicking the blue and grey lines. Click and drag the control points to adjust the volume of your track.

## the time shift tool

The Shift Tool is used to move audio tracks along the timeline. Click the Time Shift Tool. Click the track you want to slide and drag it to the desired position.

## special effects



In Audacity, you can apply a variety of special effects to your audio. The special effects can be found under the **Effect** menu.

To apply special effects to a section of your audio, select the section where you want to apply the effect and then choose the desired special effect from the **Effect** menu.

### Amplify

Makes the selected section of audio louder.

1. To amplify a section of audio, choose **Amplify** from the **Effect** menu. Adjust the slider bar to the desired amplification.

### Fade in / Fade out

Gradually increases or decreases the volume of audio.

1. Use the Selection Tool to highlight the part of the track that you would like to fade.
2. Select **Fade in** or **Fade out** from the **Effect** menu.

## saving and exporting

In Audacity there is a difference between Saving and Exporting. When you Save a project, you allow the project to be edited in Audacity at a later time. On the other hand, when you Export a file, all the changes you have made will be embedded in the audio file and you will not be able to edit them. You may choose to save a file in WAVE, MP3 or OGG formats.

To Save a Project, click **File** and then **Save Project**. The file will be saved as an Audacity file and you will be able to edit your changes at a later time.

To Export a file, click **File** and then choose the format you want to save your file as. You may also choose to Export only a section of your audio. To do that, select the section of the audio you want to export using the selection tool and then click **File, Save Selection as...** . Note that you can choose from different file formats. Please keep in mind that the changes you have made to your audio will not be editable.

When you have finished working on your podcast, you might want to save it as an Audacity project. To have your files ready for podcasting you should first export them as WAV files. WAV files offer high quality audio and will result in big file sizes. After that, you can export your file one more time. this time export it to MP3 format. MP3 files are ideal for internet distribution.

## exporting as an mp3

Before you can export your file as an MP3 file, you will need to have the MP3 encoder installed from earlier in this document.

Note that if you have multiple tracks in your podcast project, they will be mixed down. That means all your tracks in your project will be combined into a single track MP3 audio file.

To export your podcast as an MP3 file:

1. Choose **Export as MP3** from the **File** menu.
2. Name your file
3. Then an **Edit the ID3 tags** dialog box will open. This is where you provide information about your file.
4. Choose the ID3v2 radio button.
5. Enter a **Title, Artist, Album, Track Number, Year, Genre, and Comments**. **Genre** is the only required field; enter information in other fields as appropriate.
6. Click OK.

## file comparison table

	<b>File Format</b>	<b>Quality</b>	<b>Size</b>	<b>Compatibility</b>	<b>Best format for</b>
<b>Saving</b>	Audacity Project	Excellent	BIG	Only Audacity	Podcasts you plan to continue editing in Audacity.
<b>Exporting</b>	WAV format	Excellent	BIG	Most media players	Archives of completed podcasts and other recordings. Completed segments of podcasts to be used at a later date.
	MP3 format	Good	Small	Most media players	Completed podcasts for distribution online.