

AUDACITY Audio Editor/Recorder Software

(free cross-platform sound editor - <http://audacity.sourceforge.net/>)

Basic Editing 01: Cleaning Audio, Maximizing Levels, and Exporting Files

IMC Training Guide

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Recording

When you have recorded interviews, lectures, discussions, or other spoken word events, the quality of the audio before editing depends on how the event was recorded and what the acoustics were like on location. Always point the microphone or recorder at the sound source, and try to get a loud, clear signal without distorting. Headphones, earbuds, and level meters on your recorder will indicate the strength of the signal; anything reaching 0dB consistently will “clip” and you will not be able to edit the distorted sound later. Many digital recorders have Limiters or Automatic Gain Control (AGC) tools that prevent clipping by compressing the sound; it is usually a good idea to use these features unless you know you will be recording a quiet source. If your levels are too quiet, background noise (air conditioners, cars, fans, etc.) will mask the voices you want to record – adjust your mic gain accordingly. If recording from a mixing board or electronic device into your recorder, use a *LINE* input; if using an external microphone, use a *MIC* input.

Editing

Let's suppose you have recorded a stereo audio file, and you would now like to edit it using Audacity, to make the sound cleaner and louder so you can use it for radio, video, or the Internet.

1.) Open Audacity. Open your audio file [File>Open...].

You will see a visual waveform of your audio, which will show you the volume over time. If the waveform is narrow, the sound level is low; if wide, the level is high. Normally there will be a few high points (peaks) among the average levels.

2.) **NORMALIZE**

To boost the overall volume of the track, use the ***normalize*** effect [Effect>Normalize...].

Check “Remove any DC Offset.” This creates more room to boost the levels.

Select the maximum amplitude (the level you want for the loudest peaks); generally, this should be anywhere from -0.3 to -1.0dB.

3.) **MANUALLY REDUCE PEAKS** (then normalize again)

If normalizing did not significantly increase levels, zoom in on the larger peaks (select an area around each peak and press CTL+E), and manually reduce the level by using the **amplify** tool [Effect>Amplify]. Do this for each of the major peaks and then repeat normalization (step 2).

4.) REMOVE NOISE

Next you may choose to use **noise removal** to reduce background noise and hiss. Other tools that may accomplish this are **equalization** or **expander/gate**.

- a. Select a quiet region of the waveform (where there is no speech, music, or important sounds – just background noise), go to Effect>**Noise Removal** and click on “Get Noise Profile.”
- b. Again go to Effect>Noise Removal, and now choose the *amount of reduction* in dB; the *frequency smoothing* (further to the right will preserve high frequencies); and *attack time* (how fast the noise removal will turn on during quiet sections – too fast will cause stuttering, too slow will leave background noise). Apply the effect.
- c. Listen to part of the audio to make sure you have not reduced too much or too little of the sound. If you don't like the results, click CTL+Z to Undo, and then use Noise Removal again, changing the options in step 4b until you get an appropriate sound. This requires trial and error. If using the noise reduction tool does not yield satisfying results, you can undo this effect.
- d. *Two other methods*: If noise removal did not work, try using **Equalization** or **FFT Filter** to reduce unwanted frequencies. An often excellent tool for reducing low-level noise that affects your sound quality is an **expander** or **gate** (two words for very similar effects). If your version of Audacity does not have either of these in the Effects menu, there are free effects plugins available online.

See <http://audacity.sourceforge.net/download/plugins> for more information on free plugins. Follow the links for your operating system and search for free expander or gate plugins. When you find these, follow the installation instructions. You may have to save your Audacity project and close the program for installation to work.

If you decide to install and use VST plugins (a popular effect format), you must install the Audacity VST Enabler (<http://audacityteam.org/vst/>). Please note that this may or may not work with your software version or operating system. Visit the Audacity forums for help if you have problems (<http://wiki.audacityteam.org>).

An example of a VST expander/gate plugin that works with Audacity is: FLOORFISH (http://www.digitalfishphones.com/binaries/the_fish_filletts_v1_1.zip)

5.) **LEVEL or COMPRESS** the overall sound

If dynamics are inconsistent (some sections are too loud and others are too quiet), use the **leveller** or **compressor** tool [Effect>Leveller or Effect>Compressor]. Adjust the options based on how much leveling you need, and apply the effect. As in step 4, if you do not want to keep the results, use Undo (CTL+Z) and re-apply the effect(s) using different settings until you achieve the desired sound.

Be aware that if you compress a sound with poor noise reduction, the level of any noise or artifacts will also be raised. Removing unwanted noises is crucial, as is using the right amount of compression; too much compression is not a good thing.

6.) **REPAIR** (only if there are damaged samples)

If there are areas of the audio with irregular glitches that you can hear, these are digitally damaged samples, which are asymmetrical (“jagged” looking) when zoomed in on the waveform. This is rare, but makes the file unusable and impossible for many players or burners to process. If you find damaged samples, zoom in on each one, select an area including each sound, and apply the **repair** effect [Effect>Repair]. The selected area must be short in order for this to work.

7.) **CUT EDITING** (removing gaps or silences)

Often there are gaps in spoken word recordings between speakers or while individuals think of what to say. If these gaps are long or distracting, remove them by selecting the silent areas and clicking “Delete” on the keyboard. The audio file will mend itself around the cut edits you make. This will make the file shorter, smaller, and easier to use for radio.

BEWARE – do NOT make cut edits to audio if the sound will be synced to video, or else the timing will be lost; likewise, do NOT make cut edits to music, or else the rhythm will be lost. After you have made a cut edit, listen to the place where you made the cut to make sure there are no clicks. If there is an audible click where you made the cut, use the **Amplify** effect to reduce this sound so there is a smooth transition instead.

8.) **EXPORT FINAL AUDIO FILE**

When you are satisfied with the sound quality and are finished editing, **export** the selected audio [ONLY the length and the track(s) that you want] to MP3 (smaller file) or WAV (larger file) at 16 bits 44100kHz (CD quality). [File>Export... select file format and settings>OK/Export] YOU MUST EXPORT in order to produce a new audio file with improved sound. Saving the project will only save the edits, not the audio. If you are working at the IMC, please export all audio to your own folder on the “media drive\files\audio” directory.

9.) **SAVE PROJECT FOR LATER USE**

If you want to **save** the project for later use (maybe you're tired of editing all night and you want to return to the task with more energy in the future), go to File>Save, and save the project file to your folder on the "media drive\files\audio" directory.

Resources

Audacity is widely popular on multiple operating systems, and there is a large community of online users who share tips, tutorials, troubleshooting advice, and free software. Below are links to some of these resources, which include discussion boards, download sites, and training documents and videos.

Audacity Home Page: <http://audacity.sourceforge.net/>

Audacity Downloads: <http://audacity.sourceforge.net/download/windows>

Audacity Wiki: <http://wiki.audacityteam.org>

Audacity User Forums: <http://forum.audacityteam.org/>

Audacity Tutorials: <http://wiki.audacityteam.org/index.php?title=Tutorials>

Noise Removal Video Tutorial:

<http://video.google.com/googleplayer.swf?docId=-7182960533168801762&hl=en>

Popular Audacity Questions and Tutorials:

<http://wiki.audacityteam.org/index.php?title=Special:Popularpages>

Links to other free and open-source audio software:

<http://audacity.sourceforge.net/about/links>

KVR (free instruments and effects): <http://www.kvraudio.com/>

Exact Audio Copy (transfer audio from CD to computer): <http://www.exactaudiocopy.de/>

Create Podcasts:

<http://www.youtube.com/watch?v=-hrBbczS9I0>

<http://www.youtube.com/watch?v=h4IBSseAJlk&NR=1>

Create a FREE Internet Radio Station/Show (video tutorials):

<http://www.youtube.com/watch?v=P3X9P2n0paA>

<http://www.youtube.com/watch?v=hWJ5e1rk0pY>

<http://www.youtube.com/watch?v=jDleWXwYCoU>