

# Mixing and Mastering Audio Recordings for Beginners

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## A. For Best Results, Make Good Quality Recordings

**TIP: Refer to Tom Rudolph's 2008 MidWest Conference Presentation: *Making High-Quality Recordings of Your Ensembles Using a Mac or Windows Computer***  
<http://www.tomrudolph.com/presentations/DigAudioMidWest07New.pdf>

Top 5 Ways to Make a Better Midwest Clinic Recording  
[http://www.midwestclinic.com/recording\\_101/](http://www.midwestclinic.com/recording_101/)

1. Choose an appropriate space.
  - Use a large room or hall with a high ceiling.
  - Choose a room that has minimal background noise.
2. Use the proper equipment.
  - Use condenser microphones if possible.
  - Record to CD if possible (or use a high quality digital recorder)
3. Place the microphones for a better blend.
  - Use two microphones on a bar on one stand, or two stands about 4 feet apart.
  - Set the microphones about 15 feet high and 12-15 feet in front of the ensemble.
  - Plug the Left microphone (when facing the ensemble) into the Left of the recorder.
4. Set the recording levels carefully.
  - Check levels using the loudest passage of the piece. Set the levels just under the loudest level on the meter. If using a mixer, set input level first, then mix, then main, then recorder levels. (This is very important! Distorting in the Digital Domain cannot be tolerated)
5. Don't adjust any levels during the recording.

## B. Purchase Appropriate Software and Hardware

TIP: If you have the money, send the master recording to a professional to mix and master. Expect to pay \$500 or more for this service.

1. Purchase Software for Mastering (select one)  
[http://www.sweetwater.com/c702--Mastering\\_Software](http://www.sweetwater.com/c702--Mastering_Software)
  - a. Sound Forge 9 for Windows  
(lite version SoundForge Audio Studio)
  - b. Bias Peak Pro 6 for Mac (lite version Peak LE)
  - c. Use computer-based software (DAW) including Pro Tools, Logic, Cubase, Sonar, and other similar titles.  
[http://www.sweetwater.com/c699--DAW\\_Software](http://www.sweetwater.com/c699--DAW_Software)
2. Purchase a variety of quality monitors to listen to your mix.  
<http://erikhawkins.berkleemusicblogs.com/2008/02/29/setting-up-multiple-monitors-for-better-mixing/>
  - a. Quality main monitors cost in the \$500 range per speaker (\$1,000)
    - i. Mackie HR824 or Event Studio Precision 8  
[http://www.sweetwater.com/c405--Active\\_Monitors](http://www.sweetwater.com/c405--Active_Monitors)
  - b. Consider additional minimonitors
    - i. Edirol MA-7A or M-Audio StudioPro3
  - c. Monitor control (switching from one set of speakers to another)  
[http://www.sweetwater.com/c417--Monitor\\_Management](http://www.sweetwater.com/c417--Monitor_Management)
    - i. PreSonus Monitor Station
    - ii. Samson C-Control (\$99.95)
  - d. Include a pro set of headphones – Sony MDR7509HD  
<http://www.sweetwater.com/store/detail/MDR7509HD>

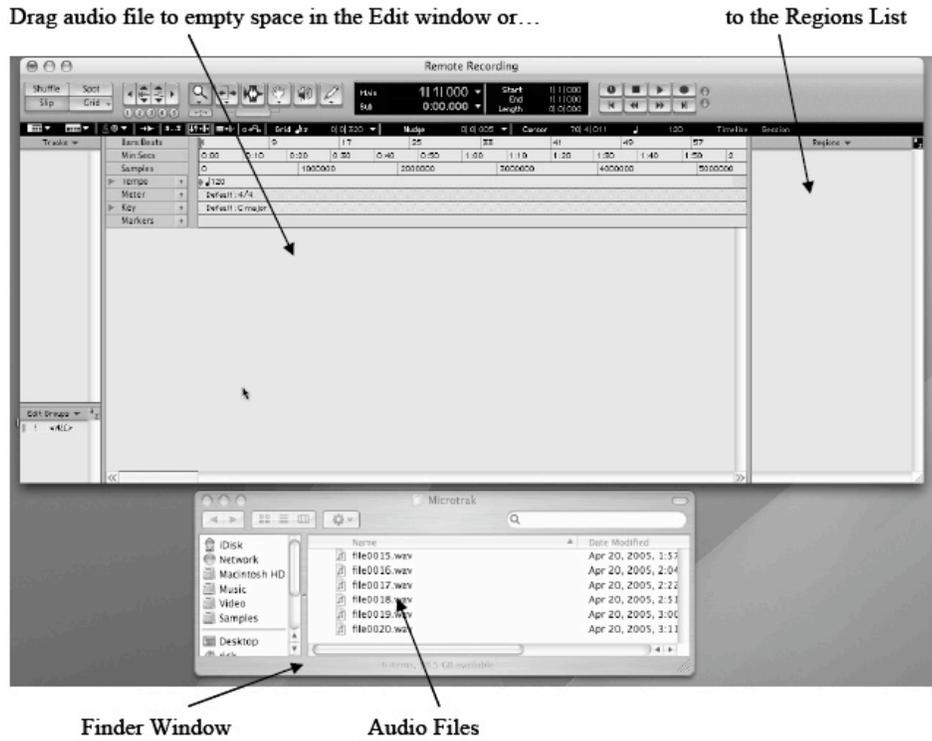
## C. Multitrack Recording (multiple tracks)

1. Set individual volumes (blending)
2. EQ various tracks – such as the bass – use a multiband EQ
  - a. Not more or less than plus or minus 10db  
<http://erikhawkins.berkleemusicblogs.com/2008/03/31/using-eq-effectively/>
3. Add Reverb  
<http://erikhawkins.berkleemusicblogs.com/2007/11/02/let%E2%80%99s-talk-reverb/>
4. Tweak Results (compare to other recordings)  
<http://erikhawkins.berkleemusicblogs.com/2008/04/15/copycat-cool/>

TIP: Stereo recording does not require mixing, so it saves a lot of time. However, only the entire recording can be edited, not the individual instruments or tracks.

## D. Stereo Tracks – Mastering

1. If recording in multitrack, bounce the tracks to a single stereo track. Then import it into the software you choose to use for mastering.
2. If recording in stereo on a dedicated recording device, import the file into Pro Tools.



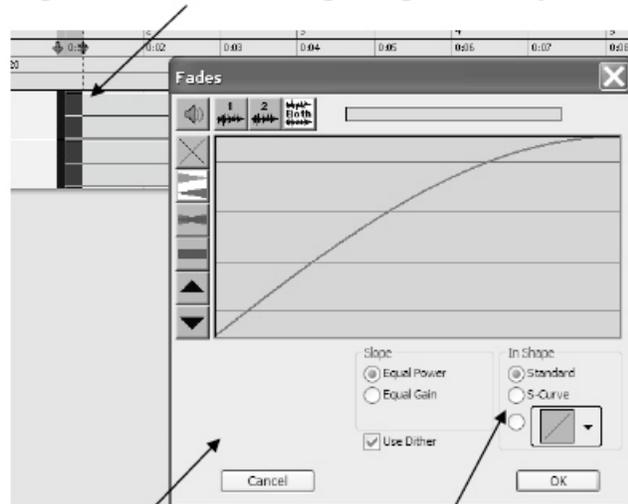
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## E. Making Edits

1. Clean up the start points and end points of recording
2. Trim off the noise
3. Create a cross-fade (so it does not pop in)

Example: *Region and Fade Dialog box*

Region with selection touching the region boundary

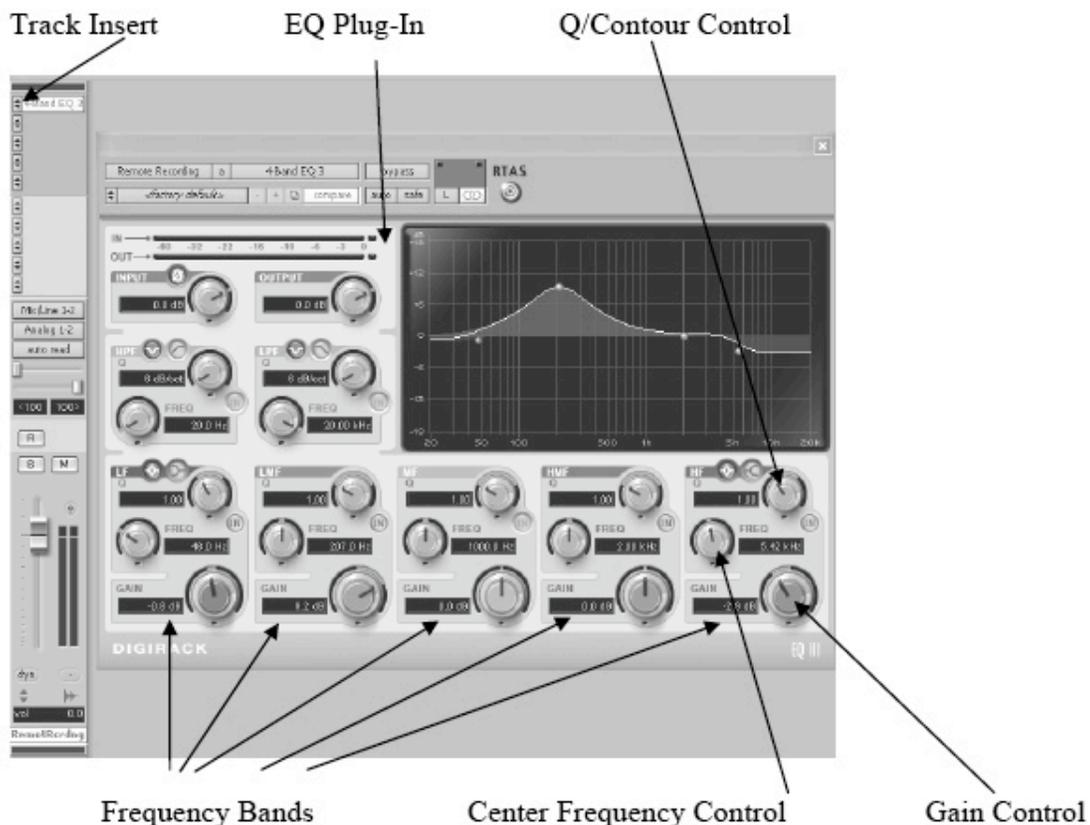


## F. Applying EQ (Equalization)

<http://erikhawkins.berkleemusicblogs.com/2008/03/31/using-eq-effectively/>

1. Listen and analyze the recording and decide what general areas need to be addressed.
2. On the parametric EQ, find/choose a band that generally matches an area that needs work.
3. With the boost/cut control, do not exceed plus or minus 10 dB.
4. Next, slowly sweep the center frequency up and down until the frequency related problem “sticks out.”
5. Decide if you want to boost or cut this selected area. Note that effective engineers more often choose to reduce the level of a frequency area rather than boost it.
6. Sweep the Q/contour setting to determine how wide a range that needs to be adjusted.
7. Repeat with other frequency bands as necessary.

Example: *Track Insert with Parametric EQ Plug-in*



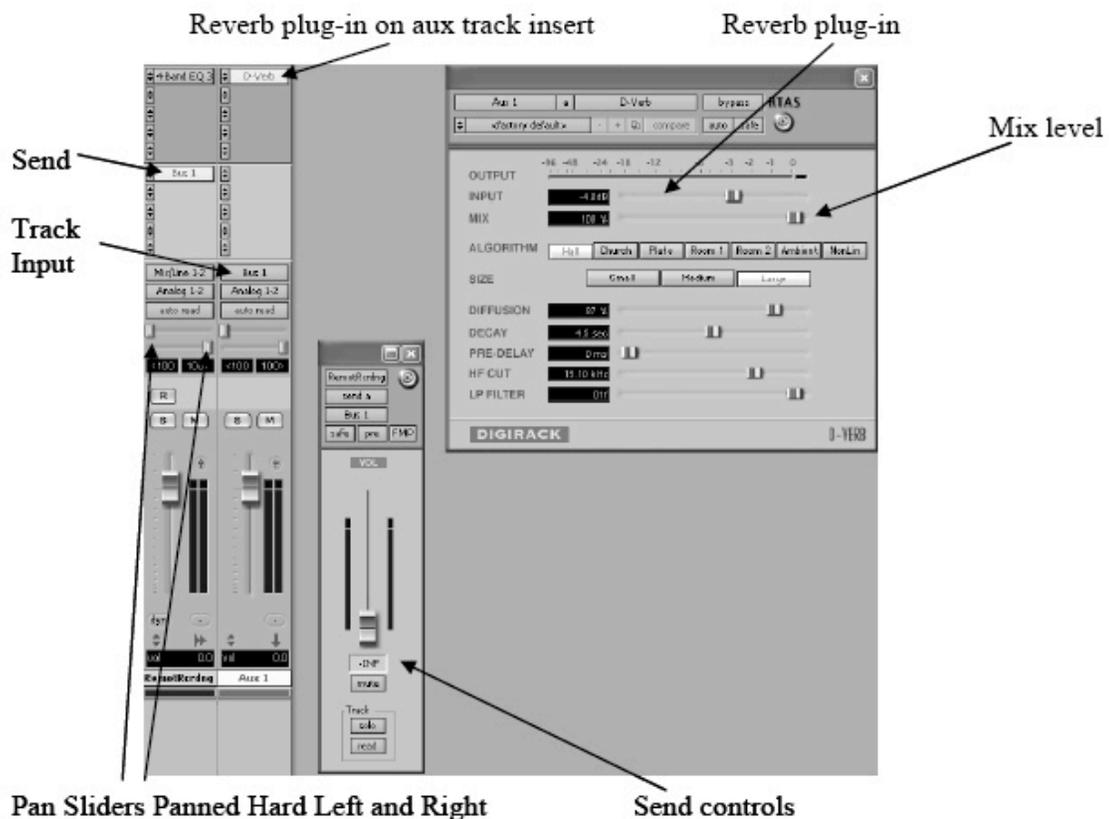
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## G. Add Reverb (if necessary)

1. Create a mono send on any tracks that need reverb.
2. The send should be assigned to an available bus (not used for any other purpose). Bus 1 is used for this example.
3. Create a mono auxiliary track and set its input to Bus 1.
4. On an insert on the auxiliary track, add a reverb plug-in. There should be a choice for mono/stereo (This designation means mono input and stereo output).
5. Set the Reverb plug-in mix parameter to 100%
6. Raise the level on the sends as desired.
7. Use the auxiliary track fader to raise or lower the overall reverb level.
8. Tweak (compare to other recordings)

<http://erikhawkins.berkleemusicblogs.com/2008/04/15/copycat-cool/>

Example: *Reverb Setup*

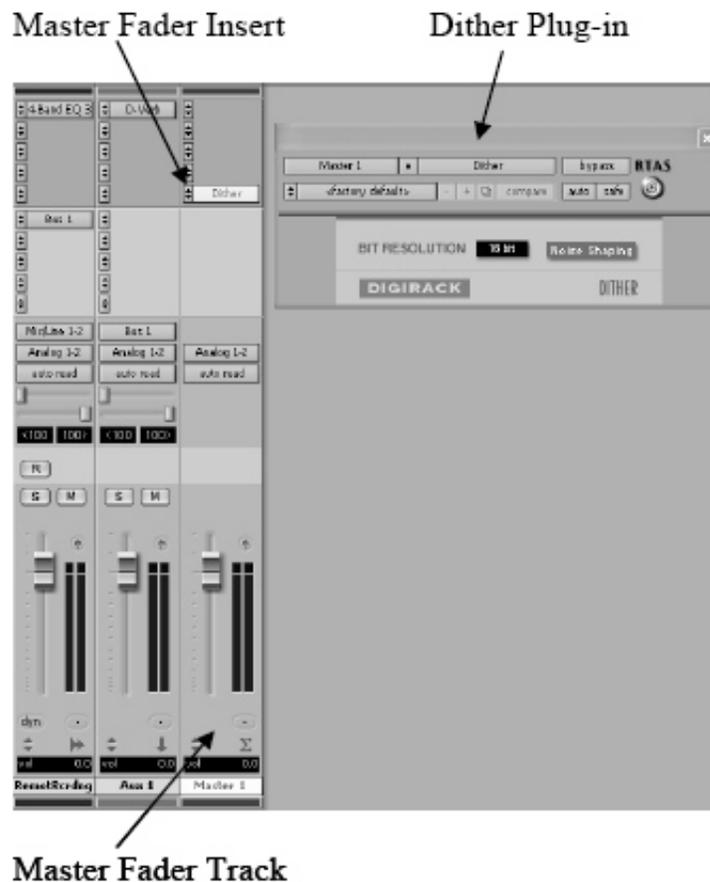


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## H. Bounce to Disk

1. First, create a master fader track. The master fader has many benefits but, is primarily used to adjust the overall level of the session. Track levels default to unity gain and can be lowered if any clipping is heard or if levels show red on the master fader channel's meter.
2. Next, a dither plug-in should be added on a master fader track insert. Adding dither reduces noise that is a byproduct of the digital audio conversion process.
3. Remember, the bounce process in Pro Tools happens in real time and takes into account current track solo and mute settings. In addition, if a selection is made in the session timeline, Pro Tools will only bounce the selection. So, before continuing to the bounce command, solo and mute buttons should be disabled and dither a selection of the desired length should be made or any selection should be cleared.

Example: *Master Fader Track with Dither Plug-in*

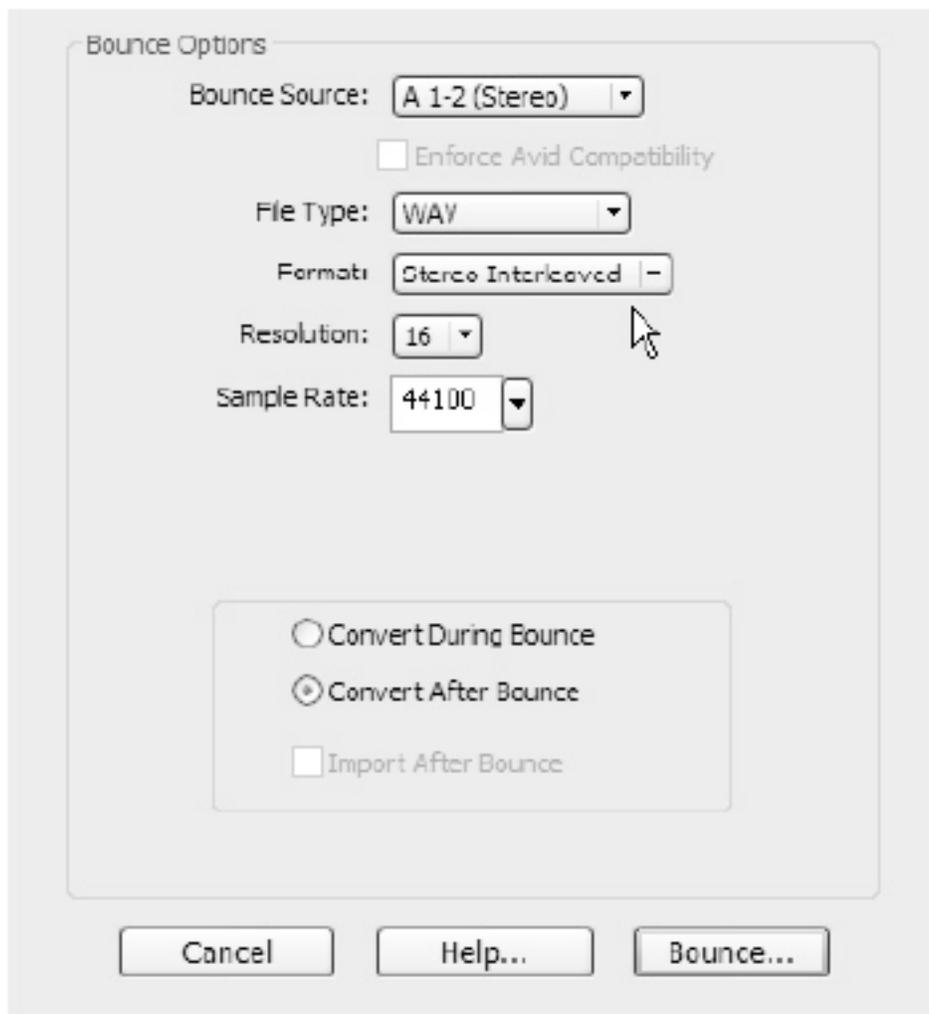


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4. Make any slight adjustments to the Master track to avoid any clipping (distortion that might occur).

**TIP: See Erik Hawkins post: The Master Fader is not for Monitor Control.**  
<http://erikhawkins.berkleemusicblogs.com/2008/02/03/the-master-fader-is-not-for-monitor-control/>

5. Choose File > Bounce To > Disk
6. Make the settings for a standard CD (there are other options)

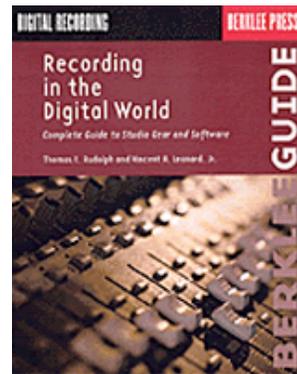


## I. Creating the Master CD (burning)

1. Basic:
  - a. iTunes (Mac/Win) or Windows Media Player (Win)
2. Advanced:
  - a. Mac: Roxio Toast 9 Titanium  
<http://www.sweetwater.com/store/detail/Toast9>
  - b. Windows: Sony CD Architect  
<http://www.sweetwater.com/store/detail/CDArchitect/>
3. Listen on many different speaker systems – computer, home stereo, car stereo.
4. Compare it to another recording that has been professionally recorded.
5. If necessary, repeat the mastering process

## J. Reference

1. Book: *Recording in the Digital World* by Rudolph and Leonard.



2. Take Berklee online courses on Desktop Music Production, Pro Tools, and many more:  
[http://www.berkleemusic.com/school/courses/music\\_production](http://www.berkleemusic.com/school/courses/music_production)
3. Take a TI:ME course on Digital Audio <http://www.ti-me.org/sites.html>
4. Read and Subscribe to Erik Hawkin's blog:  
<http://erikhawkins.berkleemusicblogs.com/>
5. Purchase software and hardware from:
  - a. [www.soundtree.com](http://www.soundtree.com)
  - b. [www.sweetwater.com](http://www.sweetwater.com)
6. Join TI:ME [www.ti-me.org](http://www.ti-me.org)

