



iTunes for Audiophiles

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Resources

Album art websites:

www.albumartexchange.com
www.amazon.com

Third-party programs:

Max: highest quality audio extraction from CDs (free)
www.sbooth.org/Max/

CoverScout (for album art) (\$40)
www.equinix.com/us/products/cover scout/

Curator (for album art) (\$25)
www.kavasoft.com/Curator/

SimplifyMedia (to listen long-distance) (free)
www.simplifymedia.com/

MPFreaker (fills in missing artwork & lyrics) (\$20)
www.lairware.com/mpfreaker/

beaTunes (finds track info, cleans up metadata) (\$25)
www.beatunes.com

WireTap Anywhere
(for mixing multiple audio sources) (\$129)
www.ambrosiasw.com/utilities/wta/

Hear (improves playback sound quality) (\$50)
www.joesoft.com/products/hear.php

Audio editors:

Audacity (free)
<http://audacity.sourceforge.net/download/mac>

Amadeus Pro (\$40)
www.hairersoft.com/AmadeusPro/AmadeusPro.html

Roxio Toast (\$50-\$90)
Roxio CD Spin Doctor (included with Toast)
www.roxio.com

SoundSoap
www.bias-inc.com

Listening to music in other rooms:

Apple TV or AirPort Express
www.apple.com

“Remote” app for iPhone or iPod Touch
(controls iTunes via wi-fi)

Kupuk’s Zones app for iPhone or iPod Touch
(controls Sonos multi-room system)
<http://kupuk.com/zones>

Books:

iPod and iTunes Pocket Guide, by Chris Breen (Peachpit)
iPod Fully Loaded, by Andy Ihnatko (Wiley)

Hardware:

DACS (Digital-to-Analog-Converters)

iMic (\$40)
www.griffin.com

ADS Instant Music for Mac
(includes Roxio CD Spin Doctor) (\$50)
www.adstech.com

Audio Specifications:

Capture
16 bit
Sampling Rate - 8, 11, 16, 22.05, 32 or 44.1 kHz
THD+N = 0.01%
SNR= 89dB

Playback
16 bit
Sampling Rate - 32 or 44.1 kHz
THD+N = 0.005%
SNR = 96dB

In/Out ports
Audio In: RCA Stereo (Left and Right); SPDIF (Toslink)
Audio Out: RCA Stereo (Left and Right); SPDIF (Toslink)
Power: USB bus powered (no external supply needed)
USB: USB 1.1 and USB 2.0 compatible as a Full Speed Device

Audiophile quality DACs:

Wadia 170iTransport (\$349)
S/PDIF output
Component Video output
www.wadia.com/products/transports/170i/index.php

Cambridge Audio DacMagic (\$399)
input: USB, Toslink, SPDIF
output: two SPDIF and Toslink, plus Singled ended phono and XLR balanced audio outputs
24/192 upsampling
www.cambridgeaudio.com/summary.php?PID=320&Title=DacMagic

Speakers used in class:

Audioengine 5 (A5) Premium Powered Bookshelf Speakers (\$349)
www.audioengineusa.com/a5_home.php

Recommended wireless adapter:

Audioengine W2 wireless adapter (\$169)
www.audioengineusa.com/aw2_home.php

Headphones used in class:

Harmon Kardon headphones
www.harmonkardon.com

USB turntable:

New Numark PT-01USB turntable (\$100)
www.numark.com/pto1usb

**Tips****Command-R for “Reveal”**

Many file-related utilities (the Finder, font managers, iPhoto and iTunes, etc.) will “Reveal” the location of a file if you select it in the program and press Command-R. For example, select an Alias in the Finder and press Command-R to see the location of the alias’s original file. Select a photo in iPhoto and press Command-R to reveal the original image file. Same for songs in iTunes and fonts in Suitcase. Many times this is handy for emailing or copying an original file.

Tip 2: If the Revealed file is shown in Icon view, making it difficult to determine where exactly in the folder hierarchy it lives, try switching to Column view or simply hold down the Command key and click on the window’s name in its title bar. A hierarchical list will pop up that shows its location. (Bonus tip: let go on any of the folders in the list to open that folder.)

Simple Wireless Music Broadcasting

Place an Apple TV or AirPort Express in your best listening area, add a display if necessary or desired, and listen to everything there. Advantage: one single cable connection via HDMI. Or, connect to components via component video, optical and/or analog RCA audio.

A Word about USB Audio and Input Monitoring

Depending on what software you choose, you may be able to monitor what you’re recording through whatever Output you selected in the Sound Preference Pane. So why wouldn’t you want to do that? Because USB Audio has a known latency problem. There’s a delay between the time the sound goes into the computer and the time you hear it. That’s why we suggest connecting your stereo speakers or headphones, so you can monitor in real time.

iTunes 8: Fine Tune Podcast Settings

Now use the Podcast Settings dialog to adjust how often iTunes checks for new podcast episodes, how many episodes to download when new ones ...
www.ipodobserver.com/story/37202

iTunes: Finding Album Art

iTunes: Finding Album Art ... Select the album you want to add artwork to in iTunes. Choose File > Get Info. ...
www.macobserver.com/tip/2008/05/28.1.shtml

iTunes: Quick Change Song Formats

iTunes: Quick Change Song Formats ... Find a song in your iTunes library that you want to convert to your default audio ...
www.ipodobserver.com/story/33255

Consolidating iTunes Libraries

While you are out and about, you add a new CD you just bought to your iTunes library. Now you have two libraries: One on the hard drive that ...
www.macobserver.com/tip/2006/10/27.1.shtml

iTunes: Accessing the App Store

Apple’s new App Store is loaded with cool programs to add to your iPhone or iPod touch, but you have to find them first. If you aren’t sure where the App Store is, don’t worry: It only takes a couple of steps ...
www.ipodobserver.com/story/36521

iTunes: Trimming Tracks

The best part is that trimming songs in iTunes is non-destructive, so you can always bring back what you cut out later on. ...
www.macobserver.com/tip/2008/08/20.1.shtml

iTunes: More Info About What’s on Your iPod

iTunes isn’t limited to just showing you how much of your iPod is loaded with your favorite stuff — it can also show you how many items are ...
www.ipodobserver.com/story/37053

Backing Up Your iTunes 7 Media Library

Choose what you want to back up from the iTunes Backup dialog. You can choose to back up your entire iTunes library, just your iTunes Store purchases, ...
www.macobserver.com/tip/2006/09/18.1.shtml

iTunes 8: Counting iPhone Apps

Check out the Quick Tip on seeing extra information about what’s on your iPod for more on the Capacity thermometer bar. ...
www.ipodobserver.com/story/37223

iTunes: Resetting iPhone and iPod Warnings

Find your media player in the iTunes media list, Control-click the device’s icon, and then select Reset Warnings ...
www.ipodobserver.com/story/36871

iTunes and iTunes Wi-Fi Music Store Purchases ...

Now that Apple has released the iPhone 1.1.1 update with support for the iTunes Wi-Fi Music Store, it’s not just iPod touch owners that can ...
www.ipodobserver.com/story/33177

iTunes: Automatic Custom iPod Playlists

Depending on the size of your music library, it can be pretty easy to run out of space on your iPod before you run out of songs to load on it. No need to despair, since this is a perfect opportunity to avoid an over-filled iPod and keep your portable music selection fresh with a little help from Smart Playlists ...
www.ipodobserver.com/story/34819

Managing iTunes Plus Settings

Apple’s new iTunes Plus feature means that we can get higher quality DRM-free music downloads at the iTunes Store. It also means we have to choose whether or not to take advantage of iTunes Plus. ...
www.macobserver.com/tip/2007/06/01.1.shtml

Controlling iTunes Visualizer

Before you can control the iTunes visualizer, you need to activate it. There are two ways to do that: While in



iTunes, you can choose View ...
www.ipodobserver.com/story/34228

Removing Dead Tracks from iTunes

If you want to see how iDupe works, be sure to check out my Quick Tip on removing duplicate tracks in iTunes. ...
www.macobserver.com/tip/2007/07/11.1.shtml

Move Your iTunes Library

Move Your iTunes Library ... If your iTunes library has grown to the point that it's time to move it to a different hard drive instead of ...
www.macobserver.com/tip/2006/11/27.1.shtml

Country Hopping in iTunes

If an iTunes Store was just added for your country, it may not show up in the My Store list. Just quit and relaunch iTunes to refresh the My ...
www.macobserver.com/tip/2006/12/06.1.shtml

Adding Internet Radio Station to iTunes

If I'm adding a new station to iTunes, it's usually one that I already know about. The example I used in this Quick Tip is from a local Public Radio station ...
www.macobserver.com/tip/2006/03/20.1.shtml

Improving iTunes CD Import Quality

Apple is now offering iTunes Plus 256kbps music downloads, so why should the CDs you import into iTunes be at a lower audio quality? ...
www.macobserver.com/tip/2007/06/08.1.shtml

Removing iTunes Artwork

For some, iTunes art work is a great feature. For others, it's just taking up hard drive space. If you want to remove album cover artwork from tracks either because you need to clear up some extra drive space, or maybe because a particular album cover doesn't suit your fancy, you can delete the graphic files from iTunes with just a couple of mouse clicks. Here's how: ...
www.macobserver.com/tip/2006/03/31.1.shtml

Rating Radio Stations in iTunes

A friend recently asked me if it is possible to apply ratings to radio stations in iTunes. You most certainly can, but not when you view stations by ...
www.macobserver.com/tip/2006/06/19.1.shtml

Drag-and-drop Playlists in iTunes

In true Mac fashion, there's more than one way to build Playlists in iTunes. One slick way to create new Playlists takes advantage of simple ...
www.macobserver.com/tip/2006/10/25.1.shtml

Why You Want To Use An External DAC (such as iMic)

24bit Internal Audio Processing

Most built-in computer audio supports a maximum of 16bit sampling, while the iMic hardware samples internally at 24bit. This means that the iMic has a much larger potential signal to noise (S/N) ratio, a wider dynamic range and superior high-end frequency response. Combine that potential with one of the audio programs and drivers that can take advantage of that capability and you're on your way to superior fidelity.

Isolates internal electrical computer noise

The power supplies are full of transient noise from the CPU, hard drives, CD drives and other computer components. Built-in computer audio hardware can transfer that noise into the audio I/O. The iMic stays outside of your noisy computer system, attaching via the external USB interface.

Eliminates "Ground-loop hum"

Ground loops usually manifest themselves as a humming noise, often directly related to the frequency of the electrical system being used. In the United States, the hum is typically at 60Hz or a near harmonic, while in many European countries the hum is 50Hz (or a near harmonic). In addition, the nature of the electrical connections may also greatly exacerbate any possible radio frequency interference (RFI) that may be in the area. A "ground loop" can occur when at least two devices are connected to a common ground through different electrical outlets. Typically, audio/video signals use zero volts (0v) as the point around which all signals are compared and contrasted, with any appreciable voltage either positive or negative, representing the information being carried. This "zero level" is often called "ground", despite the fact that it rarely refers to a physical connection to the earth.

The problem is that a piece of equipment plugged in to one outlet will probably have a slightly different "ground potential" than another piece of equipment plugged in to an outlet on a different house circuit. To prevent ground loops, all electrical grounds must be connected together. If you must connect your peripherals to two different power outlets that are on separate grounds, then you should use some method of isolating the signals and grounds from each other.

There is a case to be made that a lot of the quality problems affecting audio or video electronic devices can be traced back to ground loops.

The iMic package also includes a special stereo audio cable with a ground connector, to prevent hum or line noise when recording directly from a turntable.



iMic step-by-step

www.macfixitforums.com/ubbthreads.php/ubb/showflat/Number/394701

iMic & equipment note:

www.griffintechology.com/products/imic

Further Reading

Jay & Jeff talk about iTunes for Audiophiles

www.macvoices.com/wordpress/macvoices-8137-the-road-to-macworld-expo-jeff-gamet-and-jay-nelson-on-itunes-for-audiophiles/

Use Toast & Spin Doctor to record LPs

http://mymoments.roxio.com/enu/articles/mac/audio,burning_&_copy/2008/06/preserve_your_musical_past_with_toast_9.html

Ripping Vinyl LP Records

<http://lancej.blogspot.com/2006/01/ripping-vinyl-lp-records.html>

Preserve Your Musical Past with Toast 9

http://mymoments.roxio.com/enu/articles/mac/audio,burning_&_copy/2008/06/preserve_your_musical_past_with_toast_9.html

Toast & CD Spin Doctor video demo:

http://img.roxio.com/enu/flash/toast9_demos/listen/cdspindocor_final.html

Books:

iPod and iTunes Pocket Guide, by Chris Breen (Peachpit)

iPod Fully Loaded, by Andy Ihnatko (Wiley)

Articles:

Article about Tom Scholz of Boston (the band) and why analog sounds better than CDs:

www.soundandvisionmag.com/features/2900/backtalk-tom-scholz-of-boston.html

Stereophile on PCM and Sample Rates

www.stereophile.com/asweseeit/907awsi/

Highlight:

“Meridian’s Bob Stuart wrote a decade ago, echoing earlier work by the Acoustic Renaissance for Audio, that without noise-shaping, a minimum of 58kHz sampling and a word length of 18.2 bits were necessary for audio to be PCM-encoded with audible transparency (footnote 1), and there was a consensus at the AES conference that hi-res audio encoding does offer a sonic improvement compared with the 16-bit/44.1kHz-sampled CD standard.

In his keynote address, for example, preeminent engineer Peter Craven demonstrated how digitally transferring a 78 of an electrical recording of an aria from Puccini’s La Bohème, recorded live at Covent Garden on June 8, 1926, improved in sound quality when the sample rate was increased from 44.1kHz to 192kHz. Though it was diffi-

cult to hear in the reverberant lecture hall, at the highest sample rate, the inevitable surface noise, crackling, and distortion did indeed seem to float free from the mono image of the singer and orchestra compared to the lower rate, at which the noise and distortion seemed more wedded to the image.”

SACD described in detail

www.daisy-laser.com/technology/techsacd/techsacd.htm

About SHM-CD (Super High Material CD)

http://groups.google.com/group/alt.music.yes/browse_thread/thread/acb1b37ffe0403a4

Highlights:

“Uses special polycarbonate plastic that gives enhanced audio quality. SHM-CD’s have improved transparency on the data side of the disk that allows the laser head on CD players to read the data more accurately. SHM-CDs are also completely compatible with standard CD players.

This is NOT A NEW FORMAT, only a manufacturing improvement, and will NOT AFFECT SOUND QUALITY OF THE MUSIC. The best it can do is reduce the number laser read errors and/or be somewhat more resistant to scratches or defects. It won’t make the Ones any more singular nor the Zeros any emptier. Data is data regardless of the medium. As long as it’s still Redbook CD-Audio and no new mastering techniques have been employed, it’s the same format as always, just shinier.”

and:

“The benefits of a disc made with the SHM material Ie polycarbonate, aluminum, gold...etc...etc are what SHM is about...but yes downloading a ripped copy would pretty much be pointless as it has to do with how your player handles error correction and jitter....the more correct info sent to your DAC the better it will sound..that is all there is to it. And the better the DAC the more resolution of the increased accurate information you will get. Just as Luxen describes...better soundstaging, more air...better separation along instrumental lines and so forth. This is largely due to the information encoded for these attributes are very hard to resolve and the more bits of data you will that you can code correctly the better chance you have of hearing it.....the subtleties of these are very very hard to get correct with error correction and jitter masks them as well...that is why on a top notch player such as his he can see the benefits of the SHM disc.....”

Audiophiles Discuss CD Transport & Noise

www.metallicabb.com/index.php?s=159136ad987b28561fc391f5cd7db2b&showtopic=88863&st=25

Highlight:

“I would argue “years ago” it was proven not “debunked” that identical data did sound different on different play-



ers due to all sorts of measurable causes. first and foremost would be the DAC. Any conversion to analog would result in a measurable change at many different levels. Such as word length, sampling rate, and power supply. Then there is jitter and all its causes which had a huge effect. De-emphasis was another big stumbling block. Many a shoot wer conducted with double blind tests and these fact were confirmed. Granted back in the early 80's when all chips came from sony/phillips and all pick ups came from funi they were very hard to tell apart but as the technology progressed ut became pretty obvious. I agree that error correction is extremely accurate and most likely handles it very well but the theory is still a valid one technically. We are assuming that the error correction was reading and transcribing correctly but even a few misplaced 0's and 1's could have an effect. Not to mention the jitter artifacts of a disc having to resample that many times to come up with the algorithm to be accurate. I would say if the disc is read completely without use of the on board error correction it MAY have a chance of sounding better. Also if this new plastic is much more resistant to rotational static buildup/discharge the wobble effect in the drive that can also lead to jitter may be decreased.....food for thought perhaps..."

And about Jitter & High-Def Players:

"Your HD DVD player had to meet certain criteria to get all the certifications, and jitter reduction is at the top of the list in order to output HD audio files encoded on those discs... same with Blu-ray and DVD-A. If they didn't you would start missing out on the whole reason to have HD audio as the jitter would ruin the resolution and you wouldn't have HD anymore."

More about Noise:

This link is an academic experiment in the differences in digital discs with the same data sounding different to trained listeners...really fits this conversation/debate...it is pretty dry reading but full of excellent methodology... conclusion? That many experts hear a difference: yes...that they could prove it scientifically: inconclusive www.prismsound.com/m_r_downloads/cdinvest.pdf

Excellent paper on jitter effects and induced static:
www.stereotimes.com/commo81706.shtml

Great brief explanation of jitter with a ton of further links:
www.geocities.com/jonrisch/jitter.htm

A discussion on how jitter affects copies — why copied discs can sound better than the originals:
www.digido.com/faq/10-J/67.html
www.digido.com/faq/10-J/64.html

Another take showing data that CD-Rs can sound different from originals:

www.mrichter.com/cdr/primer/losses.htm

Also:

www.cdrfaq.org/faq04.html#S4-18-1

An excerpt from a site whose product some have had positive experiences with:

www.audience-av.com/illuminator/index.php

Highlight:

"The surface of an untreated disc will build up a static charge while spinning against the air. The static charge builds up until the voltage becomes quite high and then discharges into the air or surrounding surfaces. The charge/discharge cycle causes the disc to microscopically tilt or wobble. A wobbling disc is much more difficult to track accurately causing audible timing errors or even lost data. Although redundant codes can replace most of the missing data, the disruption of timing accuracy causes these errors to become audible. Buffering or re-clocking the data cannot totally correct timing errors or jitter. A vibrating disc is difficult to track accurately. This causes the pickup's servomotors to work much harder at maintaining focus. When the servomotors are constantly correcting the laser's position the power supply is pulsed more frequently. This causes excessive power supply fluctuations which affect the analog audio/video power supplies, degrading the overall system performance."

**Outsourcing:
Let Others Digitize Your Music:**

Watt Productions
\$15-\$30 with restoration
<https://wattproductions.com/audio-restoration-digitizing-and-upgrading-services.php>

Video For You
\$10 (\$50 with restoration)
www.videoforyou.com/vinyl_record.htm

MoonDog Digital
\$18 (\$25 with restoration)
www.moondogdigital.com/vinylconversion.html

Reclaim Media
Tape: \$7-\$10 ; LP: \$16 ; 45: \$6
www.reclaimmedia.com

Precision-AR
78s, 8-tracks, DAT, reel-to-reel, etc: \$40
www.precision-ar.com/

Reel-to-Reel-to-CD
Reel-to-Reel only: \$20-\$45
www.reel2reel2cd.com/