

21M.380 · MUSIC AND TECHNOLOGY
RECORDING TECHNIQUES & AUDIO PRODUCTION

MIXING ASSIGNMENT 3 (MX3)
SESSION MIX & MASTER

DUE: WEDNESDAY, DECEMBER 14, 2016, 9:30AM
SUBMIT TO: ATHENA COURSE LOCKER
15% OF TOTAL GRADE

1 Instructions

Mix and master two pieces of music that were recorded in the Kilian Hall recording sessions. Submit both mastered pieces with accompanying documentation on the mixing and mastering process.

- Preference is to be given to the pieces that were recorded as part of the session that you co-engineered.
- If only a single piece was recorded that day, you are expected to submit a second piece from another session.
- If two pieces were recorded in the session that you co-engineered, you may optionally replace one of them with a piece from another session.
- You are expected to submit a single master for each of the two pieces. Where multiple takes of the same piece were recorded, you are free to either pick the one you like best, or to mix materials from multiple takes to assemble your favorite version of the piece (which might be a fun challenge).
- Please note that this is an individual, *not* a group assignment! Every student is expected to submit their own work.

2 Guidelines

2.1 Preparation

Get access to the relevant audio files from the relevant recording session(s). Make sure you start this process soon!

2.2 Mixdown

Mix the two pieces. Follow the guidelines from the previous editing and mixing assignment with regards to the following issues.

- If any m/s pairs were used in the recording, determine whether the m and s signals were decoded to L and R at the time of the recording, and if not, decode them in your DAW, using tricks that we have discussed in class.¹
- Audition the source material, decide which microphones to use, and decide which sections to use from which takes.
- Prepare individual tracks with EQ and compression where beneficial.²
- Set up a static base mix in terms of level balance and stereo image. If a main stereo microphone was used in the recording session, start from that, remembering to pan its two signals hard left/right. Then, gradually bring in the spot mics as required and pan them such that the perceived direction of each instrument is the same when listening to only the main stereo mic vs. only its spot mic.
- Apply reverb (and optionally additional effects) as appropriate. If ambience microphones were used in the session, you can use those instead of – or in addition to – artificial reverb to create the room sound you envision.
- Automate fader levels and other parameters where beneficial
- Render the final mix to an appropriate output level (say, -3 dB_{FS} to -1 dB_{FS} peak level) and file format (stereo .wav, 44.1 kHz, 24 bit)

¹ Talk to the instructor if you need further instruction on this.

² Note that compression in particular, but also EQing, tend to be used much less liberally (if at all) in classical music recordings.

2.3 Master

Master your already-rendered stereo mix in a separate DAW session *on another day*. The book by Bob Katz (2014b) is a great resource. While the mixdown is concerned with the relationship between the individual elements of a piece of music, the mastering process provides an opportunity to optimize that piece as an indivisible entity. Restrict yourself to any combination of the following tools that you feel improves the overall quality of your mix:

- Master level automation

- EQ
- Limiter, compressor, expander (Senior 2011a)
- Stereo enhancement (Izhaki 2011; Senior 2011b)

As importantly, the mastering stage is where you consider the relationship between different pieces of music in terms of order, timing, transitions, level balance – anything that relates to the appearance of ‘the album’ (Katz 2014a). Decide in which order the recorded pieces will be presented. This is an important artistic decision, and it does not necessarily have to relate to the order in which the pieces were recorded! Take care to properly design the beginning of the very first track (fade-in), the end of the very last track (fade-out), and any transitions between pieces. Carefully adjust the durations of the pauses between the pieces, and consciously decide on the precise track marker positions. How much time should pass from hitting the play button to the onset of the piece? If any room silence was recorded during the session, you might find it useful for crafting the transitions between the pieces.³

Double-check the final results on yet another day with fresh ears. Be prepared to go back to the drawing board to iron out final details.

2.4 Rendering format

Your final masters should be submitted as two *separate* stereo (2-channel) .wav files, using the source material’s original sample rate and bit depth. Make sure your intended track playback order is evident from the file names! Playing the two files back-to-back without pause should yield a transition between the two tracks as you envisioned it.

2.5 Accompanying documentation

You are expected to document the editing, mixing, and mastering process of both tracks that you submit in full detail. This document should clarify the learning process that you have gone through. Discuss any unexpected problems that arose during the production process, and explain how you have addressed them. If there are things that you would approach differently next time, describe how and why. The result should be submitted as a single .pdf file. Embed screenshots into the PDF rather than submitting them as separate files. The document should include the following sections.

³ Especially in concert hall recordings like ours, it is common practice not to fade out to ‘digital silence’ between tracks, but merely to ‘room silence’ as recorded by the actual microphones used. The latter will often result in more naturally-sounding transitions.

Editing and mixdown: As usual, this should include a description of the editing and mixdown process and your underlying motivations. Provide information on track selection, fader positions, panpot, effect settings, etc. Embed screenshots into your writeup as you see fit.

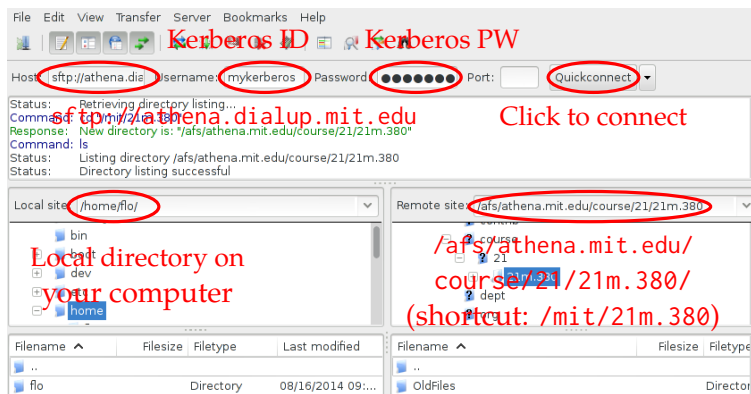
Mastering: Describe the mastering process in the same manner as the editing and mixdown process.

3 Assessment criteria

Your submission will be assessed according to the following criteria:

- Musicality of your master with regards to the production techniques you have chosen.
- Coherence of your master as a whole (transitions and level balance between pieces, etc.)
- Quality of the accompanying documentation
- Professionalism that you demonstrate through your final submission in terms of punctuality, compliance to the requested submission format, etc. Imagine you are a professional mastering engineer submitting your production to a client for commercial purposes.

4 Submission format



This assignment is to be submitted via the Athena Course Locker rather than via Stellar.

FIGURE 1. Course locker access via Filezilla (free for Mac, Win, Linux)

1. Download an FTP client such as the free and cross-platform *Filezilla*.⁴
2. Figure 1 shows how to connect to the course locker via Filezilla
3. Drag-and-drop your files from your local drive to the following directory on the server: `afs ▶ athena.mit.edu ▶ course ▶ 21 ▶ 21m.380 ▶ mx3 ▶ YOUR-KERBEROS-ID` where `YOUR-KERBEROS-ID` should be replaced with exactly that. Please do *not* delete the `.htaccess.mit` file in this directory.

⁴ https://filezilla-project.org/download.php?show_all=1

Please do *not* pack your submission into a `.zip` or other archive format at this occasion. Instead, upload your audio files and write-up as individual files, which should be named as follows.

```

afs ▶ athena.mit.edu ▶ course ▶ 21 ▶ 21m.380 ▶ mx3 ▶ YOUR-KERBEROS-ID
├── writeup.pdf
├── track_1.wav (stereo, 44.1 kHz, 24 bit)
└── track_2.wav (stereo, 44.1 kHz, 24 bit)

```

References & useful resources

- Izhaki, Roey (2011). "Other tools." In: *Mixing Audio. Concepts, Practices and Tools*. 2nd ed. Focal Press. Chap. 26, pp. 461–9. ISBN: 978-0240522227. MIT LIBRARY: 002302617. URL: http://libproxy.mit.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=454037&site=ehost-live&bv=EB&ppid=pp_461 (visited on 11/22/2014). Requires MIT library login (max. 1 reader at a time).
- Katz, Bob (2014a). "How to manipulate dynamic range for fun and profit. Think forward." In: *Mastering Audio. The Art and the Science*. 3rd ed. Burlington, MA: Focal Press. Chap. 7, pp. 101–9. ISBN: 978-0240818962. MIT LIBRARY: 002307049. On course reserve at the Lewis Music Library.
- (2014b). *Mastering Audio. The Art and the Science*. 3rd ed. Burlington, MA: Focal Press. 408 pp. ISBN: 978-0240818962. MIT LIBRARY: 002307049. On course reserve at the Lewis Music Library.

- Senior, Mike (2011a). "Buss [sic] compression automation, and endgame." In: *Mixing Secrets for the Small Studio*. 1st ed. Focal Press. Chap. 19, pp. 273–300. ISBN: 978-0240815800. MIT LIBRARY: 002092991. Electronic resource. Accompanying information and sound examples: <http://www.cambridge-mt.com/ms-ch19.htm>.
- (2011b). "Stereo enhancements." In: *Mixing Secrets for the Small Studio*. 1st ed. Focal Press. Chap. 18, pp. 261–72. ISBN: 978-0240815800. MIT LIBRARY: 002092991. Electronic resource. Accompanying information and sound examples: <http://www.cambridge-mt.com/ms-ch18.htm>.

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