Recording Overview

We will cover the following topics over the course of the semester:

- *Basic (simultaneous) tracking:* recording multiple tracks at the same time. This is commonly the procedure used when recording live performance or when making a quick recording.
- *Independent tracking:* recording tracks one-at-a-time using click "tracks" and multiple takes. Most often used for large projects.
- *Microphone techniques:* choosing the appropriate microphone and microphone characteristics.
- *Virtual instruments/MIDI*
- *Comping:* the process of editing tracks, selecting takes, and adding plugins.
- *Mixing:* involves setting levels for individual tracks, equalization, cross-fading, etc.
- *Mastering:* creating the "final" product. Commonly involves adding EQ and compression to a mixed-down track.

A few points before we start:

- There are a number of different ways to accomplish certain tasks. We will show you one way of doing things. If you find a better way of doing something, please feel free to share it with the rest of the class.
- If there is something in particular you are interested in learning, please ask!
- Sharing of projects/recordings is highly encouraged. There is a lot of "art" involved in recording, comping/mixing, and mastering. Your work might be very informative to others.

Using Microphones in the MEL

Big (Large Diaphragm) Condenser Mike

Best for general recording in room. We have 2 (one is behind the drum kit). Also makes great recording of voice but use a pop filter and don't get too close.

Small (Small Diaphragm) Condenser Mike

Best for recording instruments. Can use different capsules to change the polar pattern of the microphone (cardioid or omni-directional).

Vocal Mikes

Vocal mikes are designed to be close to the mouth.

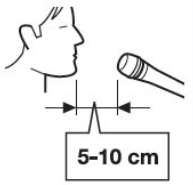
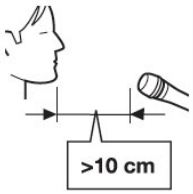
Have built-in pop filter.

Often inexpensive dynamic mikes (Shure SM58), very sturdy. Fancier ones can be ribbon mikes. More recently, condenser mikes are being designed as vocal mikes.

Give good separation between voice and other sound sources, because they are close to the voice. Easier to control feedback.

Usually directional. Singers learn to use this to control tone and volume.

"Proximity effect" – only sounds right when close to the mouth, otherwise lose bass.

Position	Resulting sound	Commentary
	High proximity effect (much bass/ fundamental) Powerful, direct sound	Very little crosstalk from other sound sources
	Less proximity effect (less bass/fundamental) Some room ambience, natural, balanced sound	More crosstalk from other sound sources
	Very little proximity effect (little bass/ fundamental) More room ambience, indirect sound	Much crosstalk from other sound sources

from Sennheiser

Pop Filters

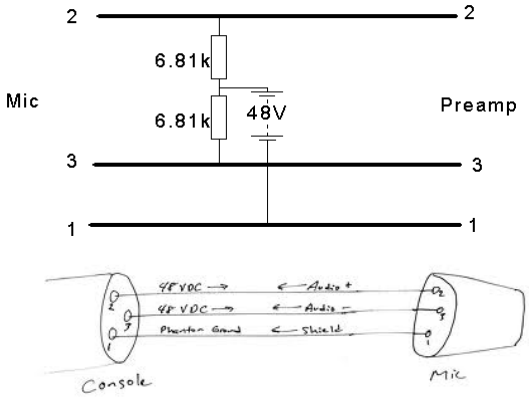
Minimize pops from “plosives” (p, b, t, d, k, g) and spittle when using condenser mikes for individual vocals. Our mikes are not inherently protected from pops (except the "vocal" mikes which have a built in pop filter) and just present the sensor to the air to get the purest signal.

Trim

The trim knobs on the preamp (one for each channel) are essential to avoid clipping (if signal too strong) or loss of useful dynamic range (if signal is too week).

Clipping in a digital recording studio is to be avoided at all cost.

Phantom Power



Uses a positive voltage on both low-impedance signal wires relative to ground.

Required by Condenser mikes (which all are mikes in the MEL are).

Safe to use on most other mikes, since the voltage source is current-limited by resistors.

Feedback

A problem with speakers and microphones. “Loop gain” of greater than 1. Laplace transform dictates particular frequency of squeal.

Generally considered a problem (keep the gain below the point where it is just beginning).

“Sound Reinforcement,” especially with acoustic guitars, can flirt with the threshold of feedback to produce desirable resonance effects.

In the studio: this typically occurs when monitoring using the speakers. Avoid this by using headphones for monitoring (also prevents “leakage” during recording).

Pro Tools

The studio uses Pro Tools (PT) as the digital audio workstation (DAW) of choice. While a number of other options are available (Digital Performer, Logic, GarageBand), Pro Tools is the industry standard.

To open Pro Tools: click on the PT icon on the dock, or select one of the two provided template projects. The templates provide two good starting points for either a two-track recording or a full-studio project, and can be used to get up and running as quickly as possible.

See the "Pro Tools Reference Guide" (Help > Pro Tools Reference Guide) for a detailed guide to Pro Tools. A good place to start is Chapter 12 (Pro Tools Main Windows).

Before you start recording

- Turn off cell phones (or put in "airplane mode")
- Remove items from your pockets, such as keys or change, as these can make audible sounds which may be recorded. Other potential noise-making items, such as belt buckles or rings, should be removed as well.
- Make sure your instrument is in tune and properly set up (e.g., intonated). Re-tune frequently during recording. If you are playing an instrument along with the piano, consider tuning to the piano.

Overview: A basic multi-track recording

We will first cover the simultaneous (multi-track) recording of several musicians. This is the "simplest" form of recording, and is primarily useful when you want to record live performances or song ideas.

Advantages: Simple, allows musicians to slip out of time, can capture more dynamic performances.

Disadvantages: Difficult to edit or re-record individual sections/tracks.

Steps:

1. Choose and setup microphones.
2. Create tracks in Pro Tools for each microphone (Track > New).
3. Set input and output for each track. For monitoring through the headphones, choose the "Analog Out 1-2" output. For the speakers (not recommended, as this could result in feedback), select "Main Out 1-2".
4. (Optional) Enable monitoring for tracks.
5. Set audio levels using the trim knobs on the audio interface (828mk3) or mic preamp (8pre). In general, try to set the level the loudest part peaks near -6dB in Pro Tools.
6. "Arm" (record-enable) all tracks to record on.

7. Hit the “record” button, followed by the “play” button to begin recording. The recording will appear in real-time.
8. Hit the “stop” to stop recording.
9. Disable recording on all tracks. Though not strictly necessary, this will prevent accidentally recording-over any tracks.
10. Save!

Playing back a recording

Once we have recorded some audio, we usually want to listen back to it. We can playback audio through the headphones, the EV “live” speakers, or the near-field monitors. In most cases, the near-field monitors are the most desirable, as they provide the best reproduction of the recorded sound.

Steps:

1. Disable monitoring on all tracks (otherwise, this could lead to feedback).
2. Make sure the “play” button on each track is enabled.
3. Select the appropriate output for the tracks to play back through. If playing through the speakers, select the appropriate output on the JBL Monitor Controller.
4. Set the location to begin playback from, either using the transport buttons or the wiper.
5. Press “play” on the transport control to begin playback.

Creating a standalone audio file ("bouncing")

In order to listen to files outside of Pro Tools, tracks must be converted into one of the commonly-used audio formats (mp3, wav, etc.). This is typically done by "bouncing" recorded tracks to disk.

Steps:

1. Select File > Bounce > to Disk
2. Choose the appropriate output to bounce. This is usually Main Out 1-2.
3. Select the desired output format.
4. Make sure that "Import" is set to "Do Not Import"; otherwise, the bounced audio will be copied back into your project.
5. Specify the file format and location, and then select "OK".