Final Exam Review

This list should help you prepare for the upcoming final exam, however it is only an outline. Any material from the in-class lectures, quizzes, handouts and assignments may appear on the exam. The exam will be cumulative with an emphasis on more recent topics.

Audio

Order of Events:
- Pre-Production
- Recording (Production)
- Post-Production
- Mastering

Pre Production
- What happens during session planning?
- How does the term 'R.O.I.' (Return On Investment) apply to pre-production?
- Why is it important for a Classical producer to study the score before a recording session?
- What pre-production practices are typical in classical recording? In pop recording?
- Classical recording sessions are expensive. What do classical producers do during pre-production in order to maximize their efficiency in the studio?
- What governs the cost of musicians for a classical recording session in North America?

Role Of The Producer
- Be able to name the different roles a producer might take on for a recording project
- What are a classical producer's responsibilities on the day of recording?
- How do a Pop producer's roles typically differ from classical?
- During recording, how does a classical producer know when a piece is 'well-covered', and that it is time to move on?
- During which of the four phases of the production process would a producer typically mark a score, dictating which takes will be used for editing?

Recording
- Classical workflow: Tracking, followed by patch sessions
- Why might a soloist be asked to record their part at a separate session from the orchestra?
- Pop workflow: Bed tracks (potentially accompanied by scratch tracks), followed by overdubs
  - Be able to elaborate on what these terms mean and why things happen in this order for both classical and pop
- Recording Approaches: (be able to describe the aesthetic goals for each, and examples of what genres take advantage of each)
  - 'Realistic (hands-off)'
  - 'Realistic (hands-on)'
  - 'Creative'
- Mic Placement:
  - What are 'mains'?
  - What are 'outriggers'?
  - What are 'spots'?
  - What are 'rooms'?

- How are these systems used together? Which is most responsible for the sound and perspective of the recording?

Post-Production
- When should editing take place? Why?
- What are some advantages to using a 'marked score' for editing like we did in Assignment 05?
- What is meant by a 'comp' performance?
- What is de-noising? When might it occur in the production process and why?
- What is mixing? Why is it wise to edit before mixing?
- What is a 'static mix'?

Reverb and FX
- What are the three components of natural reverb?
- In what order do they occur?
- What information do early reflections give us about the acoustic space?
- What is RT60?
- What aspects of a room contribute to its reverb time?
- What influences the timbre of reverb in an acoustic space?
- Be able to describe the function of the following controls in D-Verb:
  - Decay
  - Pre-Delay
  - HF cut
  - LP filter
- What aspect of sound does EQ affect?
- What aspect of sound does compression affect?
- Be able to identify, as well as describe the function of the following EQ curves:
  - Bell
  - Shelf (High or Low)
  - HPF (High Pass Filter)
  - LPF (Low Pass Filter)
  - BPF (Band Pass Filter)
  - Notch Filter
    - Think of musical examples of when we might use each of these
- What kind of EQ has a 'Q' control?
- What does 'Q' affect?
- How do we describe how steep the 'cutoff' of a HPF or LPF is? In what increments is the cutoff usually adjustable?
- Which type of EQ curve is typically used for treble and bass controls on a home or car stereo system?

Mastering
- What is mastering?
- How does dynamic range of a recording relate to its intended playback environment?
- How long does a mastering engineer typically spend working on an album?
- What are the benefits of hiring a professional mastering engineer instead of doing it yourself?
- What 'finishing touches' does a mastering engineer add?
- Why does a mastering engineer use EQ?
- What is 'pacing' in the context of mastering?

- Why might denoising be applied in mastering instead of during the editing phase of the production process?
- What is Metadata?
- What are some examples of the kinds of metadata that can be stored in an audio file?
- What does DDP stand for?
- Why do we use a DDP instead of a CD-R when sending an album in for duplication?

Compression:
- What is a compressor? What was its traditional role?
- Why are compressors a useful tool in mastering? When might they be useful for mixing?
- Be able to explain how the following parameters affect how a compressor functions:
  - Threshold
  - Ratio
  - Attack
  - Release
  - Makeup Gain
- At what ratio would we consider the compressor to be 'limiting'?
- What relative Threshold, Ratio, Attack and Release settings would be appropriate for 'peak limiting'? (i.e high/low, fast/slow)

Codecs
- What is a codec?
- What are the advantages of data-compression?
- Why don't we use lossy consumer audio codecs for audio production work?
- What *do* we we use lossy consumer audio codes for?
- What is the difference between a 'Lossy' codec and a 'Lossless' codec?
- What are some examples of each?
- How do Lossy codecs reduce file size?
- How do Lossy codecs 'decide' what data to throw away?
- How do Lossless codecs reduce file size?
- Once a file has been converted to a Lossy format, can it be returned to its original quality?

Pro Tools

- How do you 'Save As…' and why do we use this approach?
- What is the difference between an aux input in Pro Tools and an Audio Track?
- How do you expand sends to show the send fader directly on the channel strip?
- How can you check the length of a fade?
- What is the difference between inserts and sends, and in what situations we would use one or the other
- How do you 'solo-safe' a track or bus?
- What are the benefits of 'Printing' a mix into your Pro Tools session?
- What is clip gain? How do you edit clip gain in Pro Tools?
- What particular editing situation might clip gain be useful for and how will it help?
- What is 'FMP' (Follow Main Pan) and why would you want to use it?
- What does the 'PRE' button do on an aux send? What type of situations is this useful for and why?

- Be able to describe the process of exporting a mix from Pro Tools using the methods from Assignment 06.
- Why is it a good idea to use a ‘Pre Fader Send’ when bussing our MixBus to our MixAudio track?

Automation
- What is automation?
- How can you write/edit automation in Pro Tools?
- What are the different automation modes and how do each of them behave?
  - Off
  - Read
  - Touch
  - Latch
  - Write
- What is ‘edit window scrolling’ and how is it useful when writing automation?

Video

Frame Rate & Film History

- Be able to define **frame rate**
- What units do we use to express frame rate?
- How many images per second does it take to create the illusion of **motion**?
- What does ‘undecranking’ / ‘overcranking' refer to? Why were these techniques used?
- Why did the introduction of sound in picture change the way films were projected/recorded?
- What **two** changes came about with the introduction of sound?
- What frame rate became the standard for film in 1929?
- What is the **Flicker Fusion Threshold**?
- What units do we use to express the Flicker Fusion Threshold?
- What did Thomas Edison argue for in the context of frame rate?
- What is **Flicker Rate**?
- How does Flicker Rate help satisfy the Flicker Fusion Threshold and create the illusion of a higher frame rate?
- Why don’t we just use a higher frame rate instead of bothering with ‘flickering’?
- What are 2 common Flicker Rates on film projectors
- How are these Flicker Rates derived?
- In the context of a film camera/projector, what is a **Shuttle**?
- In the context of a film camera/projector, what is a **Shutter**?
- Be able to identify which of these is responsible for Frame Rate and which is responsible for Flicker Rate
- What do the **blades** of a shutter do?

Video for Broadcast

- What is the difference between progressive formats and interlaced formats?
- How do we label each one?
- Which format works the same as film?
- Why was interlacing invented?

- When was interlacing developed?
- Be able to explain in basic terms how interlacing splits frames into fields and displays them
- What frame rate was developed for Black and White television broadcast? (be able to give both it's common names as *interlaced fields per second* and *effective frames per secon*d)
- Why was this frame rate altered with the introduction of colour TV?
- What is the NTSC standard frame rate for TV broadcast? (be able to give both it's common names as *interlaced fields per second* and *effective frames per secon*d)
- What frame rate is associated with the **PAL** standard? (be able to give both it's common names as *interlaced fields per second* and *effective frames per secon*d)
- When was PAL adopted?
- What about PAL makes it specialized for televisions *outside* of North America?

Resolution

- Be able to define resolution
- What does the '**p**' in the specification '**1080p**' refer to?
- What is **aspect ratio**?
- What is the common aspect ratio of both High Definition (HD) and Full HD resolutions?
- Be able to to identify the following standards by their resolution:
  - Standard Definition (SD) TV/DVD
  - High Definition (HD)
  - Full HD
  - 4K Ultra HD

General Guidelines

- What frame rate serves as a good default as it easily conforms to NTSC standard?
- What frame rate can used to emulate the motion blur of film?
- What frame rate should be used for crisper motion capture?
- What frame rate should be used for capturing footage that you plan to turn into slow motion later?
- What format (**progressive or interlaced**) should be used for content that you plan to deliver to the web?

Pulldown

- What does **Telecine** refer to?
- What is the 'standard' **pulldown** technique?
- What is done to the 24 fps film before it can be 'pulled-down' ? What ratio does this produce?
- How does a standard pulldown work? Which film frames will occupy which video fields?
- What does **cadence** refer to in the context of pulldown?
- In the context of a pulldown, what are **dirty frames** and why is it advantageous to avoid them?
- How many dirty frames does a standard 2:3 pulldown produce?
- How many dirty frames does an **advanced** (2-3-3-2 or 2-2-3-3) **pulldown** produce?
- Be able to label/identify which *film frames* are transferred to which *video fields* when using a 2:3 standard pulldown, a 2-3-3-2 advanced pulldown and a 2-2-3-3 advanced pulldown

Transferring Film to PAL

- What approach is used when transferring film to the PAL standard? Be able to describe in basic terms what happens to facilitate the transfer.
- What frame rates do each of these standards use (film and PAL)?
- What happens to the audio during this transfer? How do we correct the result?
- What pulldown cadence is used to transfer film to PAL?

Timecode

- Why was timecode developed?
- When was timecode standardized?
- What is the format of timecode? (__:__:__:__)
- How does timecode allow multiple people working on a video production to stay organized and in sync?
- What is the difference between **drop frame** and **non-drop frame** time codes?
- How do non-drop frame time codes behave?
- How do drop frame timecode behave?
- Be able to explain the method drop frame timecode uses to stay in sync with 'real' time
- Are video frames themselves discarded when using drop frame timecode?
- How does **Final Cut Pro X** differentiate between drop frame and non-drop frame timecode in it's **display**?

Final Cut Pro X

- How does Final Cut Pro X handle documents? How does this differ from Pro Tools?
- Be able to describe what a **Library** is in FCP X
- Understand the hierarchy within FCP X (**Library** > **Event** > **Project**)
  - Be able to explain the function of each of these and provide a practical example of what kind of content they might contain
- How does **saving** work in FCP X?
- Be able to explain how choosing '**Copy to Library**' on import impacts Library size and organization
- What are **Keywords** in FCP X?
- What are **Smart Collections** in FCP X?
  - How are both of these useful organizational tools? How do they differ in functionality?
- How is a **Project** in FCP X like a **Final Edit** in Pro Tools?
- Be comfortable reading **timecode** in FCP X
- What happens to the audio and video when you add a **cross-dissolve transition** in FCP X? What is this akin to in Pro Tools?
- What is **easing** and how does it effect transitions? What is this akin to in Pro Tools?
- Be comfortable with all techniques used in both Assignments 03 and 04 (including but not limited to):
  - Managing Libraries & media
  - Importing and organizing media
  - Creating Events and Folders
  - Working in the Browser
  - Working in the inspector

- Disabling Audio using the ‘channel configuration’ area of the inspector
- Showing the colour board and adding basic colour corrections
- Creating Projects
- Navigating efficiently in the Browser and Timeline
- Adding media from the Browser to the Timeline
- Moving media within the timeline and adding gaps
- Adding and naming markers in the Timeline
- Adding media to the primary storyline
- Adding media as *connected* clips to the primary storyline
- Manually, or automatically syncing audio and video
- Trimming media
- Adding and editing titles
- Adding and editing transitions (including easing)
- Exporting a Master File
  - Modifying the settings of a Master File
  - Adding Metadata to a Master File

Final Cut Pro X Keyboard Shortcuts (know shortcuts for each of the following):

Operation	Shortcut
Move Playhead to Start of Timeline	**Home**
Move Playhead to End of Timeline	**End**
Play Backwards at 1X Speed	**J** (Press J again to increase speed to 2X, 3X, etc.)
Pause	**K**
Play Forwards at 1X Speed	**L** (Press L again to increase speed to 2X, 3X, etc.)
Advance Backwards One Frame	Hold **K**, Press **J** Once / Left Arrow
Advance Forwards One Frame	Hold **K**, Press **L** Once / Right Arrow
Play Backwards in Slow Motion	Hold **K**, Press and Hold **J**
Play Forwards in Slow Motion	Hold **K**, Press and Hold **L**
Mark ‘In’ Point	**I**
Mark ‘Out’ Point	**O**
Add Marker and Modify	**Option** + **M**
Zoom to Fit Project	**Shift** + **Z**
Enable/Disable Clip	**V**
Nudge Clip Left One Frame	**,** (comma)
Nudge Clip Right One Frame	**.** (period)
New Project	**Command** + **N**

Operation	Shortcut
Zoom In/Out Horizontally	**Command + / -**
Enable/Disable ‘Snapping’	**N**
Show/Hide the Inspector	**Command + 4**

Editing Tools:

Operation	Icon	Shortcut
Select		**A**
Trim		**T**
Position		**P**
Range Selection		**R**
Blade		**B**
Zoom		**Z**
Hand		**H**