AudioWorks Syllabus - Digital Audio Intermediate & Advanced (DAIA)

Day One: Lecture/Lab – Music Awareness for Audio Engineers: Song structure and elements such as intro, verse, bridge, chorus and others. Editing multi-track audio files based on song structure. Automation basics, Groups, and Memory Locations reviewed. Session logging and documentation using track comments. Importing Session data and creating/using templates.
Lab Day 1 - In the lab students will set up a computer and audio workstation using Pro Tools and will use supplied multi-track audio files to create a Session, set tempo, identify musical sections, and edit the song structure.
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Reading Due Before Class:
Pro Tools Reference Guide: Chapter 11 pp. 162-164, 178-179 (Templates and Save As)
Chapter 16 pp. (Groups)
Chapter 17 pp. 321-322 (The Clips List)
Chapter 21 pp. 423-432 (Importing and Exporting Session Data)
Chapter 40 (Memory locations)
Digital Performer User Guide: Chapter 20 pp. 177-194 (Tracks Window)
Chapter 21 pp. 196-199 (Track Folders and Track Groups)
Chapter 22 pp. 226 (Control Panel)
Chapter 64 pp. 783-789 (Markers)
Chapter 70 pp. 835-840 (Mixing Board)

Day Two: Lab Day 2 – In the lab students will set up a computer and audio workstation using Digital Performer and will use supplied multi-track audio files to create a Project, set tempo, identify musical sections, and edit the song structure. Students will continue to further practice skills learned throughout the course and may use the lab time to revisit Sessions/Projects created throughout the course to complete or improve them.

Day Three: Lecture – Introduction to MIDI: History of its creation and evolution. Understanding the hardware and software features of the MIDI Specification. The MIDI language: status bytes, data bytes, Channel messages, System Exclusive (device specific, Universal, MIDI Machine Control, Show Control), and System Common messages. Additional discussion includes MIDI Implementation charts, MIDI modes, Running Status, Local Control, alternate MIDI controllers, and non-standard MIDI implementation. Discussion of advances: other synthesis types, digital synths, mono/polyphony, touch sensitivity, patch memory etc. System wiring and signal flow for MIDI, using MIDI with a computer interface, creating an Audio MIDI Setup on the computer with a MIDI keyboard and interface. Both Pro Tools and Digital Performer will be used to demonstrate virtual instruments, recording MIDI using virtual instruments, and converting MIDI recordings to audio files. Using an external control surface like an iPad to wirelessly control both Pro Tools and Digital Performer.
Reading Due Before Class:
dp_help_home.html: Playing and recording - MIDI Tracks, Editing - MIDI Editor
macOS Mojave: the missing manual: Chapter 11 pp. 497-498 (Audio MIDI Setup)
Digital Performer Getting Started: Chapter 3 pp. 22-25 (Audio MIDI Setup)
Digital Performer User Guide: Appendix A - Control Surfaces
Pro Tools Reference Guide: Chapter 10 pp. 155-157 (MIDI Studio Setup)
Pro Tools Reference Guide: Chapter 9 pp. 148-149 (MIDI Controllers)

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Day Four: Lab Day 3 - Using MIDI & Virtual Instruments: Students will set up computer and audio workstations including MIDI keyboard and interface, create Audio MIDI Setup document, create a MIDI sequence in Digital Performer using virtual instruments, convert MIDI sequence to audio files, and add audio recordings to their MIDI sequence.
Reading Before Class:
Digital Performer Plug-ins Guide: Chapter 2 (Instrument Plug-ins)
Digital Performer User Guide: Chapter 15 (MIDI Tracks)
Digital Performer User Guide: Chapter 24 pp. 239-248 (Recording)
Digital Performer User Guide: Chapter 39 pp. 423-444 (MIDI Editor)

Day Five: Lab Day 4 - Using MIDI & Virtual Instruments: Students will set up computer and audio workstations including MIDI keyboard and interface, create Audio MIDI Setup document, create a MIDI sequence in Pro Tools using virtual instruments, convert MIDI sequence to audio files, and add audio recordings to their MIDI sequence.
Reading Before Class:
Pro Tools Reference Guide: Chapter 35 pp. 775-791, 801-805 (MIDI Editing)
Pro Tools Reference Guide: Chapter 47 pp. 1031-1037 (Committing/Freezing/Bouncing Tracks)

Day Six: Lecture - MIDI & External Instruments, Sampling and Loops:
MIDI: Complicated MIDI set up w/external keyboard and MIDI sound module.
Sampling/Loops: Creating samples and trimming excess audio. Creating useful rhythmic loops. Importing/Exporting samples from hard drives/media. The use of samples and loops in a MIDI composition. Tempo adjusting sequences to match recorded audio tracks, loops, and vice versa.
Lab Day 5 - MIDI Lab in Digital Performer: Students will set up computer and audio workstations including external MIDI keyboards, control surfaces, and sound modules. Audio from both the MIDI devices and the computer audio interface will be used with an external mixer. Emphasis will be on using MIDI for sound creation, recording the audio output of MIDI devices, loops, and combining digital audio with audio recorded from MIDI devices.
Reading Before Class:
Pro Tools Reference Guide: Chapter 48 (Event Operations)
Digital Performer User Guide: Chapter 16 pp. 153-154 (Audio Tracks)
Digital Performer User Guide: Chapter 82 (Scale Time)

Day Seven: Lecture - Synthesizer components and Signal Flow: Analog synthesis as a model for signal flow and signal processing. Includes components of analog hardware, VCOs, mixing, noise generators, VCFs, envelope generators, VCAs, and the interactive modulation of controls and components. Synthesizer evolution, and demonstration of many of the above topics using a digital synthesizer for comparison. Plug-ins in Pro Tools and Digital Performer as editing functions, stressing elements similar to synthesizer components and controls. Signal flow and processing in the Mix (PT) and Mixing Board (DP) windows including routing sends and Aux inputs for plug-ins.
Lab Day 6 - MIDI Lab in Pro Tools: Students will set up computer and audio workstations including external MIDI keyboards, control surfaces, and sound modules. Audio from both the MIDI devices and the computer audio interface will be used with an external mixer. Emphasis will be on using MIDI for sound creation, recording the audio output of MIDI devices, loops, and combining digital audio with audio recorded from MIDI devices.

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Reading Before Class:
Sound Reinforcement Handbook: pp. 244-258, 270-276
Pro Tools Reference Guide: Chapter 29 pp. 644-645 (Edit Modes and Tools)
Pro Tools Reference Guide: Chapter 43 (AudioSuite Processing)
Pro Tools Reference Guide: Chapter 45 pp. 1002-1005 (Elastic Audio)
Audio_PlugIns_Guide_v90_69827: Part III (this is NOT on your thumb drive)
Digital Performer User Guide: Chapter 74 (Effects Window)
Digital Performer User Guide: Chapter 75 (Audio Effects Processing)
Digital Performer Plug-ins Guide: For reference as needed - describes every audio plug-in

Day Eight: Lecture - **Synchronization**: The need for synchronization in an audio studio. FSK and pulse type sync with early devices. Master and Slave assignment of devices. MIDI Clock and System Realtime messages for synchronizing MIDI devices. Transferring MIDI data during synchronization. SMPTE history and mechanics including striping a tape, LTC, VITC, and conversion of SMPTE to MTC for sequencers. Frame formats: 24, 25, 29.97, 30 dropframe, and 30. MIDI Machine Control, MIDI Show control and integration of multiple mechanical devices such as tape decks, video decks, and computers. Combining SMPTE, MTC, MIDI Machine Control, and MIDI Clock in a studio situation. Integrating on-screen computer video with audio editing.
Lab Day 7 - Synchronization Lab : Students will set up computer and audio workstations including MIDI keyboard and interface, create Audio MIDI Setup document, create a Pro Tools Session, and synchronize to video using computer video files within the program. Create, add, and edit audio for video - including external MIDI devices.
Reading Before Class:
Pro Tools Reference Guide: Chapter 59 pp. 1326-1329, 1334 (Working With Synchronization)
Pro Tools Reference Guide: Chapter 63 pp. 1413-1414, 1425-1428 (Working With Video in PT)

Day Nine: Lecture - **Synchronization**: Video/audio editing specifically in Digital Performer compared to Pro Tools.
Lab Day 8 - Synchronization Lab: Students will set up computer and audio workstations including MIDI keyboard and interface, create Audio MIDI Setup document, create a Project in DP, and synchronize to video using computer video files within the program. Create, add, and edit audio for video - including external MIDI devices.
Reading Before Class:
Digital Performer User Guide: Chapter 32 pp. 323-327 (Movie Window)
Digital Performer User Guide: Chapter 49 pp. 663-664 (Audio Menu)
Digital Performer User Guide: Chapter 86 pp. 980-981 (Bounce To Disk)

Day Ten: Lecture/Lab - Advanced MIDI/Loop/Pitch/Articulation Map: General MIDI, Standard MIDI Files, and integration of MIDI for web content. Review of MIDI commands and MIDI wiring setups. Loop recording with DP's POLAR window. Articulations Map and MPE. Converting Audio pitch to MIDI notes.
Lab Day 9 - Advanced MIDI Lab: Students will be working on a lab project that allows them to use the techniques described in this days lecture.
Digital Performer User Guide.: Chapter 2 pp. 33-35 (Import and Export)
Digital Performer User Guide.: Chapter 31 (POLAR)
Digital Performer User Guide.: Chapter 33 (Articulation Maps)
General MIDI.pdf (on thumb drive)

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Day Eleven: Lecture/Lab - CD/DVD/Blu-Ray Archiving: CD/DVD/Blu-ray Mechanics:
Red Book Audio CD specification, CD creation using bounced mixes from Pro Tools and Digital Performer. CD/DVD/Blu-ray backup of data. Stem bouncing. CD assembly in DP.
Lab Day 10 - Synchronization Lab : Students will set up computer and audio workstations including MIDI keyboard and interface, create Audio MIDI Setup document, create a Pro Tools Session or DP Project, and synchronize to video using SMPTE/MTC and/or utilize computer video files within the program. Create, add, and edit audio for video.
Reading Before Class:
Digital Performer User Guide.: Chapter 84 00. 967-969, 975-979 (Bounce To Disk)

Day Twelve: Lab/Exam (4 hours) **- Final Disc Assembly Lab & Exam:** Final Exam will be given at the beginning of class. Students may use the remaining time to complete all of their DAIA projects. Students will backup all their projects to their thumb drives and make a duplicate on DVD. This DVD will be handed in by the end of the day and used for evaluating the hands-on portion of the students grade for the DAIA course.
Lab - Project completion : Students will setup all necessary computer, MIDI, and audio workstation components and use the day to complete any and all DAIA projects for the course. The time can be used to refine, practice, and double-check completion of each projects tasks. Some previous projects can also be done in the other DAW (DP instead of PT, or PT instead of DP) for extra credit.

Day Thirteen: Lecture - The Music Business: (possibly over Zoom)
An in-depth lecture on how the music business functions. Legal documents are reviewed and explained including employment contracts for artists/producers/engineers, management agreements, music licensing, royalties, publishing and copyrights. Interpersonal skills required for the business side of the music industry. Successful freelancing and marketing of your skills.

Some days will include a quiz. All labs will continue to reinforce elements learned in the DAB course, as well as topics covered throughout the DAIA course. This includes increased editing proficiency, use of control surfaces for audio programs, completion of each project, and the archiving & backing up of all files. It is the student's responsibility to backup their work to their thumb drive every day.