Tech 275 Digital Sound - Syllabus

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Course Description

This course provides a foundation in the techniques of recording, production, sound design, and editing, for digital audio media. Students will understand the physical characteristics of sound; audio and audio editing terminology; and the digital processes used to transform sound. Students will both record and create sound files, and edit and produce a variety of multimedia audio elements using typical digital technology. Applicable uses include sound tracks for video/film, multimedia products for promotion and learning, musical entertainment products, web site enhancements, games, and virtual worlds.

The course will meet for four hours per week for lecture, guided interactive demonstrations, and critiques. Appropriate systems are provided in the classroom. Assignments will require access to computers with specific software installed and, occasionally, audio hardware attached. Students may be encouraged to work on many assignments as partners. Equipment may be available for checkout from the instructor. Additionally, much or all of the software used in this course is available for download as free basic versions, enabling the student to complete assignments at home.

Students are encouraged to acquire their own headphones. Please consult the instructor however, as headphones with unrealistic sound tend to cause the user to produce inferior audio.

Assignments and Tests

Assignments will be given and due almost every week. Tests will be given approximately every other week. Grading will be based 60% on assignments and production work and 40% on test scores. Grading will follow EWU standards, with 97% = 4.0 Please note the course work becomes more difficult if you get behind on assignments.

Text *A specific text is not required for this course. A set of links to trusted online resources will be provided. If you wish to procure a comprehensive textbook, Modern Recording Techniques, by David Miles Huber, is recommended.*

Turning in Assignments

Due to the large size of digital audio files, we will use FTP to turn in assignments. We will share an FTP site at ***www.drbraukmann.com***. The username is ***stus1*** and the password will be given to you in class. Your instructor will be happy to help you get started.

Most assignments must be submitted in a compressed format. MP3 is recommended.

Topical Outline

Unit 1 Sound Waves, Acoustics & Terminology

• Physics of sound waves, waveforms, overtones and harmonics, frequency and pitch, levels, beats, attack, decay, sustain, release, decibels, types of noise

• Chamber characteristics, reflection, absorption, transmission, resonance, echo, reverberation

• Loudness and psychoacoustics, frequency and masking

• Intro to software (*Audacity first, then Studio One)* set up, typical editing operations and file formats, and introduction to fundamental editing techniques

• Simple sound generation

• Monitoring with headphones & speakers, technology & performance

Unit 2 Digital Audio Fundamentals

• Sampling, resolution, clipping, signal to noise ratio, , digital audio file types, compression schemes, optimization

• Digital editing fundamentals, introduction to sound manipulation effects, creating new sounds, matching sounds, combining sounds, etc. multiple tracks

• Noise Reduction techniques

Unit 3 Recording and Reproduction Equipment

• Options for bringing sound into a computer: A-D / D-A converters, mixers, microphones, speakers, etc.

• Introduction to live recording

Unit 4 Sound Design Introduction and Narrative Support

• Types of supporting sounds: Object, Action, Environment, Emotions, Transitions, Foley

Unit 5 Sound Generation – Virtual Instruments and MIDI

• Music editing terminology: pitch, intervals, keys, scales, transposition, beats and tempo, bars, loops, keyboard interface

• Survey of software and hardware synthesizer operation, real and virtual instruments, samplers, MIDI and loop editors

• The emotional communication of pitch intervals, key, time signature, creating and resolving tension.

Unit 6 Multi-track Editing and Introduction to Mastering

• File organization, mixing, grouping, dimensional editing, compression, etc.

• Set up, typical editing operations and file formats multitrack editing and mastering, etc.