

Tech 275 Digital Sound - Syllabus

Course Description

This course provides a foundation in the techniques of sound design, recording, production, and editing for digital audio media. Students will understand the physics of sound, audio and audio editing terminology. Students will create and record sound files, apply effects, and mix and produce a variety of multimedia audio elements using typical digital technology. Applicable uses include Web sites, games, multimedia products for promotion and learning, music and entertainment products, film, and live sound.

Summer Session

The course will meet for ten hours per week for lecture and guided interactive demonstrations. Appropriate systems are provided in the classroom. Students may be encouraged to work on many assignments as partners. Assignments will require access to computers with specific software installed and occasionally specific hardware installed. Some of the software used will be available for free student download. Required hardware will be available from the instructor. CEB labs may be available for homework assignments during the week. Also some of the software is available in the PUB lab. And the MARS (Monroe Hall) lab will have all the software available. Although we use Macintosh computers, you may use PCs for all recording, and most of the homework.

Assignments and Tests

Assignments will be given and due approximately twice per week. Tests will be given approximately every week. Grading will be based 60% on assignments and production work and 40% on test scores. Grading will follow EWU standards, with 97% points = 4.0

Text

d'Esquivan, Julio. Music Technology – Cambridge Introductions to Music

Turning in Assignments

Due to the large size of digital audio files, we will use FTP to turn in assignments. You are asked to create a directory using your last name as the directory name. We will share an FTP site at www.drbraukmann.com. The username is **stus1** and the password is **Deesser1/Combfilter1**. Your instructor will be happy to help you get started. As last resort burn a CD to give to your instructor. Most assignments must be submitted in MP3 format. Please note it becomes very difficult if you get behind on assignments.

Instructor

Dr. James Braukmann,
jamesbraukmann@gmail.com, CEB 335

Topical Outline

Unit 1 Sound waves, acoustic environments

- Physics of sound waves, waveforms, overtones and harmonics, frequency and pitch, levels, rhythm, attack, decay, sustain, release, decibels, types of noise, etc.
- Chamber characteristics, reflection, absorption, resonance, echo, reverb, etc.
- Loudness and psychoacoustics
- Intro to software (*Audacity*) set up, typical editing operations and file formats and introduction to fundamental editing techniques
- Simple sound generation
- Headphones & speaker technology & performance

Unit 2 Digital Audio Fundamentals

- Sampling, resolution, clipping, signal to noise ratio, multiple tracks, digital audio file types, compression schemes, optimization
- Digital editing fundamentals, introduction to sound effects: creating new sounds, fixing sounds, combining sounds, etc.
- Sound design for film and video.

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 and Foley

Unit 4 Multi-track Editing and Mastering

- File organization, mixing, dimensional editing, compression, etc.
- Intro to Production Editing Software (*Logic Express*)
- Set up, typical editing operations and file formats Multitrack editing and mastering, etc.

Unit 5 Sound Generation

- Software and hardware synthesizer operation, vocoders, modulated waveforms, Fourier transforms, samplers and loop editors

Unit 6 Sound Designers Introduction to Music Theory

- Pitch, intervals, keys, scales, keyboard interface, beats and tempo, melody
- Musical and tabular notation as typical interfaces
- The emotional communication of pitch intervals, creating and resolving tension