

Western Michigan University
School of Music

Class: MUS1940 Introduction to Recording
Room: 2206 Kohrman
Instructor: John Campos
Email: john.campos@wmich.edu
Class Time: Monday 4-5:40pm
Office: 2118 Dalton Center
Office Hrs: Monday and Wednesday 2:00-3:00

COURSE DESCRIPTION

MUS 1940 is an introduction to audio engineering, the recording studio, its components and language. MAT students must receive a grade of B or higher in this course in order to proceed into higher-level audio engineering classes.

This is a lecture only class. Your grade will reflect the quality of your notes and your ability to grasp the concepts. Students who hope to proceed to upper level courses and/or the MAT degrees should make a habit of reading trade magazines such as Sound On Sound, Mix, EQ, Tape-Op, and utilizing the treasure-trove of free audio tutorials online. You will hear much more on this in class.

Students who miss 3 or more classes, whether the absences are excused or not, cannot pass this course.

Week 1

Course overview. Explanation of the MAT degrees and opportunities at Western Sound Studio. Studio tour. Brief introduction to the Mackie Onyx 4 Bus. (<http://www.americanmusical.com/ItemFiles/Manual/mackie/maconyx24-32.pdf>) Begin lecture on the nature of sound, propagation, perception, and the decibel.

Key terms/concepts: Frequency, amplitude, wavelength, pure tone/sine wave, complex tones, diffraction, harmonic series, timbre, octaves, white noise, pink noise, polarity, transducers.

Week 2

Continuation of foundational terms and concepts.

The decibel. Threshold of hearing, equal loudness contours, dynamic range, unity gain, signal to noise ratio, frequency response, peak/VU meters,

balanced/unbalanced lines, A, B and C weighting of sound measurements.
+4dBu, +4dBu vs. -10dBV.

Week 3

Complete foundational terms and concepts.

Week 4

Microphones.

Key terms/concepts: Dynamic, moving coil, ribbon, condenser/capacitor, phantom power, directional sensitivity, polar patterns, pressure design, pressure gradient, pressure gradient plus phase shift, omni, bi-directional, cardioid, proximity effect, pads.

Week 5

Loudspeakers

Key terms/concepts: point source, effect of room surfaces, dynamic moving coil and ribbon and electrostatic designs, enclosures, ports/vents, direct radiators, horn loading, crossovers, dispersion, power ratings (program average vs peak), impedance, series/parallel operation.

Week 6

Analog Recording

Key terms/concepts: Definition of analog, tape-what it's made of, erase/record/playback heads, nonlinear transfer of energy, bias, tape saturation, gap loss, tape hiss, tape speeds, print through, cross talk, wow and flutter, track formats.

Week 7

Mid-term exam.

Week 8

Exams returned. Go through test and answer questions.

Week 9

Equalization

Key terms/concepts: Definition of EQ, high pass, low pass, shelving, graphic, parametric, bandwidth, Q, which type of EQ to choose.

Week 10

Dynamics Processors

Key terms/concepts: Why we use them, compressors, limiters, expanders (noise gates), threshold, ratio, attack time, release time, hard/soft knee, pumping and breathing, side-chain or key input.

Week 11

Reverb and Delay

Key terms/concepts: Definitions of each effect, tape delay, digital delay, doubling delays, initial impulse, early reflections, onset of reverb, decay, RT60, chamber, plate, spring, digital reverb, sense of depth direct/reverb ratio.

Week 12

Digital Audio

Key terms/concepts: Definition, binary, bit depth, sample, sample rate, dither, anti-aliasing filter, sample and hold, analog to digital converter, multiplexor, error protection and interleaving, error detection and correction, digital to analog converter, smoothing filter, Nyquist frequency, 2/1 rule, aliasing, quantization, granulation noise, advantages/disadvantages versus analog.

Week 13

Review – Students can ask questions on any topic from the semester.

Any exam missed may not be made-up unless a valid excuse for missing the original test time is presented to the instructor.

GRADING

There will be one quiz 10%, a mid-term 45%, and a final exam 45%.

To assure compliance with the Americans with Disabilities Act, faculty at Western Michigan University need to know how a disability will impact student participation and work in courses. Any student registered with Disability Services for Students who would like to discuss accommodations for this class should contact the instructor of record in a timely manner. Students with documented disabilities who are not registered with DSS should the office call at (269) 387-2116 or visit wmich.edu/disabilityservices. Students cannot request academic accommodations without scheduling an appointment and meeting with a DSS staff member. If a student does not register with DSS, his or her academic accommodations cannot be executed.

