Music 192A Syllabus 2016

(Readings in blue, assignments in red)

Week 1: Introduction and overview: sound, hearing, electromagnetism.

Monday: Course overview, introduction to acoustics and human hearing
       Course Notes Reading: Sound, Hearing

Wednesday: Introduction to electromagnetism: the passive electronic devices - basic concepts
       Course Notes Reading: Electronics (Part 1)
       [Chapters 1, 2 and 3, The Science of Sound Recording.] <- Chapters available on 192a web site
       Optional reading: Chapters 1 and 2, Sound and Recording, 6th Edition;

Week 2: Basic electrical circuits, devices, signals.

Monday: Simple electronic circuits – voltage divider and its applications, simple audio filters
Wednesday: Audio circuit analysis, resonance, audio signal characterization and measurement

       Course Notes Reading: Electronics (part 2)
       [Chapter 4, The Science of Sound Recording]

       Homework: Assignment 1 (Due Wednesday week 3)

Week 3: Microphones: transducer types and physics of transduction.

Monday: Microphone types: dynamic and capacitor principles
Wednesday: Microphones in use – polar patterns, studio demo, Homework 1 due.

       Course Notes Reading: Microphones (part 1)
       [Chapter 5, The Science of Sound Recording]
       Optional reading: Chapter 3, Sound and Recording, pp 47-69.

       Studio Exercise 1 (Due Wednesday week 7)

Week 4: Stereo and multi-microphone recording techniques.

Monday: Stereo theory – principles of sound localization
Wednesday: stereo miking techniques – studio demo

       Course Notes Reading: Microphones (part 2)
       Optional reading: Chapter 16, Sound and Recording; Microphone Handbook; Mic It!

       Homework: Assignment 2 (Due Wednesday week 5)

Week 5: Active electronics, shielding, grounding, and signal interconnection.

Monday: Audio circuits, impedance matching, active electronics – transistors, vacuum tubes, op-amps
       Course Notes Reading: Circuits

Wednesday: Shielding and grounding, power distribution Homework 2 due
       Course Notes Reading: Interconnection and shielding
       [Chapter 6, The Science of Sound Recording]
       Optional reading: Chapter 12, Sound and Recording

       Homework: Assignment 3 (Due Wednesday week 6)
Week 6:  *Mid-term exam*

**Monday:** Review of material so far

**Wednesday:** In-class Midterm, *Homework 3 due*

Optional reading: Chapter 5, Sound and Recording

**Week 7:  Mixing consoles and monitoring.**

**Monday:** Mixing consoles

**Wednesday:** Monitoring, *Studio Exercise 1 due*

**Course Notes Reading:** Mixing Consoles, Monitors
[Chapter 7, The Science of Sound Recording]
Optional reading: Chapter 6 & 7, Sound and Recording

**Studio Exercise 2 (Due week 10)**

**Week 8:  Theory of magnetic recording, analog & digital recorders**

**Monday:** Theory of analog magnetic recording

**Wednesday:** Practical analog recorders and their care and maintenance

**Course Notes Reading:** Magnetic Recording
[Science of Sound Recording Chapter 7]
Optional reading: Chapter 8, 9, Sound and Recording

**No Class – Thanksgiving week (Nov. 21-25)**

**Week 9:  Introduction to Digital Audio, Analog-to-Digital conversion**

**Monday:** Sampling, digital theory

**Wednesday:** Digital recording systems

**Course Notes Reading:** Sampling
[Chapter 8, The Science of Sound Recording]
Optional reading: Chapter 10, Sound and Recording

**Homework:** assignment 4 (Due week 10)

**Week 10:** **Monday** (Dead week) Review session, *Studio Exercise 2, Homework 4 due* (no class Wednesday)

**Final:** Thursday, Dec. 15, 8:30 am