Instructor: Charles Gutierrez
E-mail: chgutier@usc.edu
Mailbox: TMC G118
Office: TBD
Office Hours: UPC Campus M-T-W (by appointment)

Course Description

Fundamentals of Audio Recording, MTEC 175, is an introduction to the principles and techniques of audio recording and music production as related to project or small studio. Topics will include the physics of sound, audio cables and connections, audio signal flow, microphones, digital audio and computer based recording systems, studio setup, monitoring, MIDI music production, and session management.

Objectives

Students will acquire a basic understanding of signal flow, gain structure, optimal recording levels, signal to noise ratio, microphones, project studio setup, monitoring systems, signal processing, analog and digital audio, mixing and MIDI.

Requirements, Exams and Grading Information

Student evaluation in MTEC 175 will consist of exercises, quizzes, writing assignments and exams. The exercises are take-home assignments intended to help the students develop and apply the specific language used in an audio production environment when discussing related hardware, software, principles and techniques. Lab projects will consist of written assignments or student demonstrations of concepts and techniques discussed during labs. Concise instructions for all exercises and lab projects will be available at a later date. All exercises and written assignments are due one week after assignment.

The midterm and final exams are written exams. Please note that the final exam is cumulative. Exams must be taken during the scheduled times and cannot be made up at a later date. **The final exam will be given during the university scheduled final exam time for the class.**

Attendance is taken each class and will count towards your final grade. After two absences your grade will be lowered one-half grade for each additional absence. Because of the importance of hands on experience with this subject, attendance to all classes is the only method of understanding the concepts of this specialized topic.

Grading

1. Class Participation and Research   10%
2. Quizzes and Exercises   25%
3. Midterm Exam   30%
4. Final Exam   35%

GRADING SCALE

100 - 94	A
93 – 90	A-
89 - 87	B+
86 - 83	B
82 - 80	B-
79 - 77	C+
76 - 73	C
72 - 70	C-
69 - 67	D+
66 - 64	D
63 - 60	D-
Below 60	F

Recommended Textbooks- *wait till first meeting discussion before any purchases*

Huber, David Miles and Runstein, Robert E. *Modern Recording Techniques, 8th Edition.*
    Focal Press (2014) **(Highly Recommended)**
Dittmar, Tim. *Getting the Most Out of Your Project or Professional Recording Studio*.
    Focal Press (2011). **(Recommended Reference Only)**
Edstrom, Brent. *Recording On a Budget*. Oxford University Press (2010).
        (Recommended Reference Only)
Hosken, Dan. *An Introduction to Music Technology, 2nd Edition*. Routledge (2014).
        (Recommended Reference Only)
Thompson, Daniel. *Understanding Audio, Getting the Most Out of Your Project or
    Professional Recording Studio.* Berklee Press (2005). **(Recommended ref Only)**

Other resources:

Lynda.com videos (https://blackboard.usc.edu, then look for the Lynda button)
Parsons, Alan. *The Art And Science of Sound Recording* (DVD). Keyfax New Media
(2010).
Sound on Sound magazine (http://www.soundonsound.com/)

Statement on Academic Conduct and Support Systems

Academic Conduct
Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards*https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* http://equity.usc.edu/ or to the *Department of Public Safety* http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems
A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.htmlprovides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information http://emergency.usc.edu/*will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Blackboard and Communication
Course materials, assignments, documentation and grades will be posted on Blackboard at **https://blackboard.usc.edu/**. Please make it a habit to use/check your USC E-mail account. Any E-mails sent to the class will only use your USC E-mail account.

Class Schedule – *(Schedule and Content Subject to Instructor Changes)*

Module 1 - *Course Introduction*
> *Introduction to Audio Recording and Production*
>> From bedroom to studio
>> Audio engineer jobs
>> Why do I need to know how this technical stuff works?
> Reading: *Modern Recording Techniques* Ch. 1

Module 2 - *Physics of Sound*
>> Sound wave fundamentals
>> Wave propagation
>> Sound color, timbre, overtones, and harmonics
>> Resonance
> Exercise – Matching frequencies
> Reading: *Modern Recording Techniques Ch. 2*

Module 3 - *Audio Levels and Cables*
>> dB SPL, dBV, dBu
>> Balanced vs. unbalanced cables
>> Connection types
> Reading: *Handouts*

Module 4 - *Monitoring*
>> Speaker Types
>> Amp Types
>> Monitor Control
>> Room Layout
>> Speaker Setup
> Reading: *Modern Recording Techniques Ch. 17*

Microphone 5 - *Microphone Basics*
>> Microphone types/designs
>> Polar patterns
>> Transient and frequency response
>> Microphones preamps
> Reading: *Modern Recording Techniques Ch. 4*

Module 6 - *Introduction to Microphone Technique*
>> Matching microphones to the application
>> Close/spot, distant placement, multi-microphone setups
>> Proximity effect
>> Isolation vs. bleed
>> Proper cable, stand, clip/shock mount usage
> Reading: *Modern Recording Techniques Ch. 4*

@ Week 8 - **Midterm Exam**

Module 7 - *The Audio Signal Path*
                Small format consoles, DAW emulation
                Input section and mic/line amp
                Inserts and auxiliary sends
                Fader, solo and mute
        Reading: *Modern Recording Techniques Ch. 14*

Module 9 - *Introduction to Audio Processing*
                Spectral devices
                Dynamic devices
                Time based devices
        Reading: *Modern Recording Techniques Ch. 15*

Module 10 - *Digital Audio Fundamentals*
                Sample rates
                Bit depth
                File compression
                File Types
        Reading: *Modern Recording Techniques Ch. 6*

Module 11 - *Computer Audio*
                Computer basics
                Data/transfer rates
                Storage media
                Backup systems
                File management
        Reading: *Modern Recording Techniques Ch. 7*

Module 12 - *Digital Audio Workstation (DAW)*
                Types and components
                DAW I/O and audio interfaces
                Representative hardware and software manufacturers
                Recording, editing and mixing
                Audio time compression/expansion
        Reading: *Modern Recording Techniques Ch. 7*

Module 13 - *Introduction to MIDI*
              Historical background
              MIDI messages
              MIDI sequencing: linear vs. non-linear
              MIDI editing
              Control change messages and musical performance
              MIDI mapping
              Linear vs. non-linear workflow
        Reading: *Modern Recording Techniques Ch. 9*

Finals Week: Final exam day and time TBA – Published USC Final Exam Date