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

Module 12 - *Digital Audio Workstation (DAW) - TBD*
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*

"TBD" Modules may be excluded due to semester time constraint and shortening.

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