

MTEC 378 Introduction to Mixing and Mastering

Course Syllabus Spring 2021

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Course Prerequisites

MTEC 446A Computer Assisted Recording and Editing

Course Goals

Students will learn the fundamental principles and techniques needed to fuse multiple audio elements into a clear comprehensive final product. By the end of this class, students should be able to deliver professional sounding stereo audio files, that can be used on TV, radio, film and the internet. The course will examine various creative and technical issues used in modern music production, including level control, frequency content, stereo imaging, and spatial depth. Lessons will include equalization and dynamic level adjustment of stereo content to make it competitive, balancing audio tracks, panning, dynamics (compressors, limiters, expanders, and gates), enhancers, delays and reverb.

Requirements, Exams and Grading Information

Student evaluation in this class will consist of a variety of work. In class and take home exercises will be assigned in class and must be turned in one week later, unless indicated otherwise. Projects will consist of audio assignments and in class demonstrations of concepts discussed. Concise instructions for all assignments and exercises will be available via BlackBoard.

Attendance is mandatory and will count towards your final grade, as part of class and lab participation. Because of the importance of hands-on experience with this subject, participation in all classes and labs is the only method of understanding the concepts of this topic.

Throughout the semester, questions about your grades should be addressed immediately. Do not wait until the semester has ended to resolve a grading issue.

Required Software

PRO TOOLS (v.2020) - EDU subscription

1-month student subscription: \$9.99 (paid monthly) 1-year subscription: \$99.00

[Web link for purchase](#)

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Required Hardware

You must have reference headphones or studio nearfield monitors to accurately mix and master. The department **STRONGLY** recommends the [Sony MDR-7506](#) headphones or similar, as they are the standard headphone for all MTEC and MUIN courses. If you plan to take any other courses in these areas, you will need reference headphones.

I also recommend these options if you can afford to invest a bit more:

[Beyerdynamic DT 770 PRO 250 ohm Closed-back Studio Mixing Headphones](#)

[Focal Spirit Professional Headphones](#)

Required Resources

To view additional asynchronous learning resources, students will need to create a free USC LinkedIn Learning account:

<https://itservices.usc.edu/linkedin-learning/>

Blackboard:

Course materials, assignments, documentation and grades will be posted on Blackboard at <https://blackboard.usc.edu/>.

Communication

Please make it a daily habit to use/check your USC E-mail account. Any E-mails I send to the class will use that account. ***Please add “**MTEC 378**” in the subject header of all emails*** This will help me to organize all the emails that I receive and respond to you more quickly. In addition, all course materials and class grades will be posted on BlackBoard (<http://blackboard.usc.edu>). For example, the course syllabus can be found under Syllabus and class assignments under Assignments.

Grading Summary

1. Participation	15%
2. Exercises	45%
3. Mastering Project	10%
4. Final Exam Project	30%

Textbooks (optional)

Senior, Mike. [Mixing Secrets for the Small Studio](#)

Owsinski, Bobby. [The Mixing Engineer's Handbook \(4th edition\)](#)

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Izhaki, Roey. [Mixing Audio Concepts, Practices, and Tools \(3rd Edition\)](#)

Savage, Steve. [Mixing and Mastering in the Box: The Guide to Making Great Mixes and Final Masters on Your Computer](#)

Other Resources

<http://www.soundonsound.com/>

<https://blackboard.usc.edu> (Lynda.com)

<http://mixonline.com/>

<http://www.recordingmag.com/>

Alan Parson's [Art And Science of Sound Recording](#) DVDs

Grading Scale:

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

Assignments are due by the beginning of the class period as indicated on Blackboard. Assignments turned in after the deadline will be marked late and penalized 10% for that day as well as 10% for each additional day or portion of a day that they are late. Allow for slow Internet connections and server upload time so that your files are completely uploaded before the deadline. The Final Project may not be submitted late. **Final projects not turned in by the deadline will receive a grade of zero.**

Schedule

Should the needs of the class so dictate, I reserve the right to change the course outline. You will be notified of any substantive schedule changes.

Week 1 **Martin Luther King Day, university holiday**

Week 2 **Introduction**

Course outline, expectations, policy and procedures
Mixing as an art - Objective/subjective
Characteristics of a Great Mix
Genera specific mixing
Techniques over Tools
Practice makes perfect

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Importance of Reference tracks

Assignment: Exercise 1_Selecting Reference Tracks

Week 3 Understanding Sound: Monitoring

The Room, the speakers, headphones, controls

Setting up the mix space - Cross referencing

Loudness affects perception

Bass Management

Spectrum Analyser - Voxengo SPAN Plus

Critical listening and ear training

iZotope Pro Audio Essentials

Assignment: Exercise 2_Critical listening EQ

Week 4 Signal Flow and Routing

Inputs, Outputs and Busses

Inserts (Pre-fader) - Serial Processing

Sends and Auxiliary Effects

Subgrouping and Sub-mixing

Pre/Post fader metering

Master Fader (Postfader Inserts)

Templates and consistency

Aux Channel master processing

Assignment: Exercise 3_ Fix the Mix

Week 5 President's Day, university holiday

Week 6 Preparing the Mix Session and Optimization

Optimization practices

H/W Buffer and DAE Playback

Preferences, settings and standards

System Usage window

Track layout, naming and navigating (CNTRL + Shift)

Color coding

I/O Labeling

BNCE Bus Demo

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Unused tracks - Hide and make inactive
Memory Locations (Markers and General Properties)
Assignment: Exercise 4_Building a Mix Session Template

Week 7 Getting Started - Building a Rough Mix

Game plan - Genera, strategy, artistic direction
Visualize the Mix (Audience Perspective)
Panning - Mono versus stereo instruments
Frequencies and spacial relationships
Amplitude (levels) and Dynamic Range
Foreground and Background elements
Identifying problems: Levels, EQ, Phase
Import reference material
Metering: Peak, RMS, Loudness
Assignment: Exercise 5_Mix 1

Week 8 Equalization and Controlling Frequencies

EQ (Frequency Specific Level Control)
EQ Perspective and Spectral Mixing
Cutting over Boosting (Sound quality and headroom)
Key of song and fundamental frequencies (Bass)
Filtering (Highpass/Lowpass)
Tempo and EQ relationships
Assignment: Exercise 6_Critical Listening EQ

Week 9 Dynamic Processing

Compressors/Limiters (Level dependent volume control)
Gates and Expanders (Reduce underlying noise)
DeEssers (frequency dependent) Range = Amount of Attenuation
Transient Shapers - Reshaping an instrument's envelope
Compressing a vocal (limit dynamic range)
Compressing drums (added punch using attack and release)
Buss Compression and Limiting
Parallel, New York and upward compression
Assignment: Exercise 7_Mix 2

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- Week 10 Adding Space To The Mix**
Routing Time Based Effects
Delays: Timing, Feedback, Control
Reverb: Types, Timing, Control
Modulation: Types and application
Copy presets Audio Suite
Assignment: Exercises 8_Mix 3
- Week 11 Automation Strategies**
Static versus Dynamic mixes
Making dynamic adjustments over time
Automation, modulation and transparency
Real-time recording automation versus graphic editing
Defining focal points throughout the track
Automating Mutes and EQ to create space
Automating plugin parameters
- Week 12 Printing Mixes**
Different versions: Vocal up/down, A cappella, Instrumental
Printing Internally
Bouncing Stems
Assignment: Exercise 9_Printing Mix Versions
- Week 13 Mastering - Basics I**
Identifying Basic Problems, Signal flow, Gain staging
Inserts and plug-ins
Limiting, Compression, Enhancing a stereo Mix
Level Matching, Apparent Level, Stereo Compression,
Distortion, Clipping, Saturation
Assignment 10: Mastering Project
- Week 14 Mastering - Basics II**
Equalizing Stereo Mixes
Tone Matching, Filter types, EQ Types, Frequency Ranges

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Assignment 11: Final Project

Week 15 Final Mix and Mastering Project due

Synchronous Session Recording Notice

As required by USC, the synchronous sessions for this course will be recorded and provided to all students asynchronously. This policy does not apply to individual lessons.

Sharing of course materials outside of the learning environment

USC has a policy that prohibits sharing of any synchronous and asynchronous course content outside of the learning environment. Please do not share or otherwise distribute class materials, music scores or recordings produced by me or any students in the conduct of this course without expressed permission.

SCampus Section 11.12(B)

Distribution or use of notes or recordings based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study is a violation of the USC Student Conduct Code. This includes, but is not limited to, providing materials for distribution by services publishing class notes. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the Internet or via any other media. (See Section C.1 Class Notes Policy).

Zoom etiquette

I expect you to demonstrate your presence and participation in class by your being on camera in all Zoom sessions. If you will be unable to keep your camera on during the synchronous Zoom session, please contact me prior to the class session to discuss.

USC technology rental program

We realize that attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university's equipment rental program or other assistance. To apply, please [submit an application](#) on the Student Basic Needs portal.

USC Technology Support Links

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[Zoom information for students](#)

[Blackboard help for students](#)

[Software available to USC Campus](#)

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 Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.