

Performance Technology, MTEC 451

Course Syllabus

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Office Hours: Thursdays by appointment

Course Description

Performance Technology (MTEC 451) is an in-depth course focusing on the concepts, principles, and techniques for performing music using audio and MIDI technology. Topics will include the study of building custom setups for real-time performance, designing electronic instrument layouts, advanced device configuration, and musical content creation, as well as the opportunity to learn and practice performance skills using Ableton Live, MIDI devices, external controllers, and other instrumentation.

Prerequisites

Requires a minimum of intermediate-level proficiency with Ableton Live.

Course Goals

The goal of this course is that each student—upon successful completion—gains a theoretical and practical understanding of performing with modern audio technology. This will include a working knowledge of popular digital audio performance platforms, external hardware devices, and controllers. To reach this goal, each student must accomplish the objectives described below.

Course Objectives

- Using contemporary production techniques, demonstrate proficiency of fundamental concepts in audio and MIDI technology performance by applying them to practical, real-world scenarios, including an opportunity to perform live.
- Based on the course content, group interest, and individual aspirations, configure custom setups, instruments, and effect devices for real-time performance.
- Identify and customize digital audio software, external hardware, and MIDI controllers.
- Synthesize, process, and catalog sounds for personal music libraries.
- Describe, explain, and demonstrate the process of performing with audio technology.
- Create and produce musical compositions and arrangements to support improvised real-time performances.

Required Course Materials

To actively participate, students will need the following (Thornton Students can receive EDU discounts on select equipment. See additional Audio and MIDI Equipment Purchase Options for USC Thornton Students and Faculty document):

Software

- **Ableton Live Suite** <https://www.ableton.com/en/shop/education/>
- **MaxMSP** by Cycling '74 <https://cycling74.com/shop/academic>
- **Screen Capture software** (QuickTime Player, Screen Flow, or equivalent)

Hardware

- Personal Laptop Computer
- Audio Interface (preferably multi-input/output)
- Midi Controllers or the Equivalent
- Speakers and/or Headphones

*****USC Thornton has some items that can be loaned*****

Requirements, Exams, and Grading Information

Student assessment in MTEC 451 will consist of weekly exercises, a mid-term, a final project, and a final performance. Unless otherwise noted, all exercises are due one week from the date assigned. All assignments must be turned in to the class folder on the music technology lab server and must carefully follow file naming conventions, file management, and format guidelines.

Exercises

Exercises have been designed as hands-on activities to help students achieve the course goals and objectives. Assignments are due by the beginning of the class period, as indicated in the course Assignments section on Blackboard.

Midterm Project

This project is an opportunity to test ideas for the final project and performance. The midterm submission is assumed to be a study on the way to the final, a more extended submission. However, the midterm project should still stand on its own and be a working model with adequate attention paid to a convincing musical performance setup strategy, including designing individual tools, sounds, performability, and overall layout.

Final Project

The final project will design and implement a custom performance setup for the class's final performance. Students will document and explain their workflow in a 7-minute screen or video capture. In addition, students will submit a cataloged library of instrument patches, device presets, and sound designs. Further instructions will be available at a later date.

Grading Summary

Participation 10%
Exercises 25%
Mid-term Project 15%
Final Project 25%
Final Performance 25%

Grading Scale:

92 – 100 = A	90 – <92 = A-	88 – <90 = B+
82 – <88 = B	80 – <82 = B-	78 – <80 = C+
72 – <78 = C	70 – <72 = C-	68 – <70 = D+
62 – <68 = D	60 – <62 = D-	<60 = F

Notes

Each class will contain both theoretical and practical experiences. Should the class's needs dictate, I reserve the right to change the course schedule. You will be notified of any substantive schedule changes.

Schedule

- Week 1 Overview: Evolution of Electronic Music Performance
- DJ culture
 - Acousmatic music
 - Playback Engineers - a new member of the band
 - Controllerism: a hands-on approach to computer music performance
 - Exercise 1: Show and tell - Audio tech performance inspirations and aspirations
- Week 2 Strategies for building a live performance setup
- Defining configuration options
 - Performance models - System, Instrument, Piece
 - Setting goals and managing expectations
 - Brainstorming and conceptualizing
 - Technical limitations and considerations - Too many buttons
 - Exercise 2: Brainstorming your ideal performance setup
- Week 3 Designing and configuring Ableton Live for Real-Time Performance
- Example setups
 - Session layouts and performance templates
 - Optimizing computer settings and session preferences
 - Exercise 3: Deconstructing performance templates
- Week 4 Hands-on control with MIDI
- MIDI controller options
 - Control Surfaces versus MIDI controllers
 - MIDI remote assignments and hard mapping
 - Ergonomic layouts - Considerations and limitations
 - Building custom MIDI controllers and MIDI remote scripting
 - Exercise 4: Mapping mockup controller layout

- Week 5 **Building Device and FX chains for real-time performance**
- Custom effect design for real-time performance
 - Building processor-friendly devices for optimal hands-on control
 - Smart knobs and macro control layouts
 - Insert versus auxiliary effects
 - Exercise 5: Designing device and effect chains for performance
- Week 6 **Virtual Instrument Racks**
- Custom instrument design workshop
 - Multi Instrument performance racks
 - Performance drum racks
 - Exercise 6: Building instrument racks for performance
- Week 7 **Exploring Live Looping**
- Live looping aficionados
 - Live's Looper device
 - Looping using tracks and clips
 - Wireless foot control
 - Assignment: Midterm projects due
- Week 8 **Interfacing Multi-Performer Setups**
- Considerations and strategies for multiplayer performance
 - Instrumentation, roles and responsibility
 - Synchronizing multiple computers
 - Cues, clicks, slates and monitoring
- Week 9 **Backing Tracks and Playback**
- Organization and management
 - Using Setlist
 - Multi-output assignments
 - Redundancy
- Week 10 **Implementing and Syncing External Hardware, Instruments**
- MIDI sync
 - External clock configuration
 - Ableton Link
 - iOS connectivity
 - Exercise 8: External hardware and/or iOS device integration
- Week 11 **Automating Tasks for Hands-Free Control**
- Automation envelopes
 - Follow actions
 - Clyphx - demonstration and workshop
- Week 12 **Performance preparation**
- Week 13 **Performance preparation**
- Week 14 **Final project and performance**
- Week 15 **Wrap-up and peer evaluation**

Communication

Please make it a habit to use/check your USC email account. Any emails I send to the class will use that account. 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 notes under Content.

Statement on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.