

Performance Technology, MTEC 451

Course Syllabus

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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, 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

It is the goal of this course 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 successfully 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 of select equipment. See additional Audio and MIDI Equipment Purchase Options for USC Thornton Students and Faculty document):

Software

Ableton Live Suite

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Ableton, Inc. will offer complimentary full functioning free demos for the semester to students in classes where Live Suite is the primary DAW

Ableton Live Suite Edu purchase: \$449 (\$74.83 for 6-months)

Weblink: <https://www.ableton.com/en/shop/education/>

Screen Capture software (QuickTime Player, Screen Flow or equivalent)

Hardware

Audio Interface (preferably multi input/output)

Midi Controllers or the Equivalent

Speakers and/or Headphones

Class Text

Dennis DeSantis, et al. *Live Reference Manual (Version 10)*

Requirements, Exams and Grading Information

Student assessment in MTEC 499 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 are to 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, which is a longer 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, the design of individual tools, sounds, performability and overall layout.

Final Project

The final project will consist of designing and implementing a custom performance setup to be used for the class final performance. Students will document their workflow and explain it in a 7-minute screen 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

1. Participation	10%
2. Exercises	25% total
3. Mid-term Project	15%
4. Final Project	25%
5. 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 needs of the class so 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 <ul style="list-style-type: none">• Acousmatic music• DJ culture• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• Session layouts and performance templates• Example setups• Optimizing computer settings and session preferences• Exercise 3: Deconstructing performance templates

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Week 4	Hands-on control with MIDI <ul style="list-style-type: none">• 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 effect chains for real-time manipulation <ul style="list-style-type: none">• Building processor friendly devices for optimal hands-on control• Custom effect design for real-time performance• Smart knobs and macro control layouts• Insert versus auxiliary effects• Exercise 5: Designing device and effect chains for performance
Week 6	Virtual instrument racks <ul style="list-style-type: none">• Custom instrument design workshop• Multi Instrument performance racks• Performance drum racks• Exercise 6: Building instrument racks for performance
Week 7	Exploring Live looping <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• Considerations and strategies for multiplayer performance• Instrumentation, roles and responsibility• Synchronizing multiple computers• Cues, clicks, slates and monitoring• Exercise 7: Mini collaborative performance (Demo in class week 9)
Week 9	Backing tracks and playback <ul style="list-style-type: none">• Organization and management• Using Setlist (Strange Electronic)• Multi output assignments• Redundancy
Week 10	Implementing and syncing external hardware, instruments and iOS devices <ul style="list-style-type: none">• External clock configuration• MIDI sync• Ableton Link• iOS connectivity• Exercise 8: External hardware and/or iOS device integration
Week 11	Automating tasks for hands free control <ul style="list-style-type: none">• Automation envelopes• Follow actions• Clyphx - demonstration and workshop

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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

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.html provides 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.

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

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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

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 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.