

MUSC 1240 Building Musical Instruments
 Brown University
 Fall 2017

Tuesday, Thursday 10:30-11:50am
 Granoff Center Physical Media Lab

OBJECTIVES

- Build acoustic, analog, and digital musical instruments, and understand how different combinations thereof can form unique musical performance systems.
- Perform expressively using the instruments you build.
- Understand the unique affordances of different materials.
- Develop techniques of designing, composing, and improvising in accordance with sonic goals.

PROJECTS

Project #1 Handheld acoustic instrument 10%

Design and cut an acoustic instrument from wood, plastic, or other approved material. Probably percussion, but wind or other sounding mechanism possible. Design and realize at least two drafts and compare their resonance. What are the sonic and performative affordances of these instruments?

Project #2 Contact microphone 10%

Make a contact microphone using a Piezo element. Run audio signal to a small amplifier. Test the contact microphone on different surfaces, including your handheld instrument from Project #1. Make the contact mic setup artful and playable. What kinds of sounds and sounding actions work best?

Project #3 Analog synthesis 15%

Make a monophonic oscillator using a Hex Schmitt trigger integrated circuit. Send to an amp, or introduce one or more small speakers. Add components, or attempt a different IC. Achieve an interesting, complex sound. How does interacting with the synth compare to interacting with previous acoustic instrument and contact mic?

Project #4 Digital controller 15%

Control your computer using an Arduino Teensy and physical components. Adjust the software patch to your liking. Incorporate different physical components to make a musical system. What is unique about interacting with a computer-based instrument, and what is similar to previous instruments?

Interludes (5% each x 3) 15%

The interludes are opportunities to step back and focus on expressivity and sound, either refining your existing instruments or exploring new ideas. I will bring in a box of objects which you may use (optional). For instance, we might hack a portable transistor radio circuit board to

make a tactile noise system, or you might try adding photoresistors to your analog synth, or you might go outside and try recording your contact mic on different surfaces.

Final Project (including Performance, Video) 35%

Create a self-contained instrument or system. Consider questions such as: How do you want it to sound? How does it work in solo and group music contexts? Make a short (2-3 minute) demo video of your instrument and post to Youtube/ Vimeo/ etc. This video introduces your instrument to the world, so plan wisely: a close view of your hands on the instrument might suggest intimate, small-scale interaction, while heavy, rhythmic music might suggest the instrument is meant for club/ dance settings. During reading period we will have a final performance using your instruments. Be thoughtful about the form this takes: anything from a “normal” 5-10 minute concert piece, to an installation, to a group improvisation, etc.

MATERIALS

The primary materials for this class are physical components. I will provide parts lists and can help with sourcing (we may coordinate group trips to Home Depot for materials such as wood and plastic). For the most part students should purchase their own materials. Expected basic-level materials cost for the semester is about \$80-\$100. Contact me individually if you have questions about materials or financial assistance.

Good online sources of materials:

Amplifiedparts.com
Digikey.com
Jameco.com
Sparkfun.com
Taydaelectronics.com

SCHEDULE

Thu Sep 7	Intro, syllabus
Tue Sep 12	Orientation to PML & Design Workshop, safety, tools
Thu Sep 14	Project #1 Handheld acoustic instrument
Tue Sep 19	Project #1 (cont.)
Thu Sep 21	Project #1 (cont.)
Tue Sep 26	Project #1 (cont.)
Thu Sep 28	Share Project #1 including sound ideas

Tue Oct 3 Thu Oct 5	Interlude #1, PML training, soldering basics Project #2 Contact microphone
Tue Oct 10 Thu Oct 12	Project #2 (cont.) Project #2 (cont.)
Tue Oct 17 Thu Oct 19	(KW away) Interlude #2: try contact miking acoustic instrument Share Project #2 Contact mic incl. relationship to acoustic instrument
Tue Oct 24 Thu Oct 26	Project #3 Analog synthesis Project #3 (cont.)
Tue Oct 31 Thu Nov 2	Project #3 (cont.) (KW away) Interlude #3
Tue Nov 7 Thu Nov 9	Share Project #3 incl. playing experience Project #4 Digital controller
Tue Nov 14 Thu Nov 16	Project #4 (cont.) Project #4 (cont.)
Tue Nov 21 Thu Nov 23	Project #4 (cont.) NO CLASS, Thanksgiving recess
Tue Nov 28 Thu Nov 30	Share Project #4 incl. unique features of digital system Brainstorm Final project, incl. affordances of hybrid systems
Tue Dec 5 Thu Dec 7	Final project (cont.) Final project (cont.), rehearsal for concert
Wed Dec 13 Sat Dec 16	Dress rehearsal Final concert 8:00pm (demo video due by 11:59 pm)