

Learning Objectives

- Describe the historical relationship of the electronic manipulation of sounds in the creation of music, and the relevance of that relationship for contemporary creativity.
- Creatively use a variety of sound modification devices and techniques in the creation and realization of short musical pieces.
- Create as a team a musical composition utilizing the technologies learned in this class.

Brief historical background

- **Instruments** (*sounds, timbres*)
- **Development through creative composers, stylistic variety** (*emersion experience to earlier compositions, combinations of sounds*)
- **Technological development and their integration** (*engineering connections*)

Modular-Analog Components

- Wave modification
- Creative, musical use (*small projects*)

Compositional Project

- Pro-tools software interface project
 - Filtering
 - Duplication, overlap, organizing sounds

Included in both courses:

Weekly process journal

- Current thinking
- Changes in understandings
- Current goals

Interviews

- Prior
- After

Observations

- During coursework
- Collaborations
- Think aloud during creativity

Self-report

- Learning

- Meaning of experience
- Impact of involvement
- Transfer to discipline

Assessment

There are two segments of assessments associated with this project.

The first is an assessment of student learning from the course. Upon completion of the course, the student will have the knowledge and skills to:

1. Demonstrate an understanding the aspects of the basic physics of sound as it relates to what is perceived as musical sound.
 - a. Content knowledge assessed through written exams.
 - b. Conceptual connections assessed through a written essay that describes how this understanding relates to the student's primary field of study, scored using a rubric.
2. Understand the electronic generation of musical sounds and how to duplicate/transform "traditional" musical sounds as well as how to create "new" electronic sounds.
 - a. Technical skill development assessed though a project that manipulates and organizes sounds into component groupings that will be integrated into a musical composition, scored using a rubric.
3. Exhibit a conceptual understanding of how the elements of music (rhythm, melody, harmony and timbre) relate to elements of engineering (e.g., frequency spectrum, amplitude distribution, energy content, and information) and how they relate to the creative organization that occurs within a musical composition and engineering constructs.
 - a. Knowledge of terminology assessed through written exams.
 - b. Conceptual understanding assessed through a written essay that describes the common and differential relationships between musical and engineering application, scored using a rubric.
 - c. Conceptual understanding of creative organization assessed through analysis of authentic application of constructs in musical and engineering examples.
4. Organize traditional, manipulated, and created sounds into a musical composition utilizing these electronic musical sounds that clearly integrates the musical and engineering elements in a purposefully creative and aesthetic arrangement.