

MUCP 4680/5680/6910
History and Techniques of Electroacoustic Music
Fall 2013

Time and place: MWF 1:00 – 1:50, MU 2009

Instructor: Dr. Andrew May

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Office hours: WF 12:00 – 12:50 pm, or e-mail for appointment; MU 1003/2009

Final exam: Friday, December 13, 10:30 – 12:30 p.m.

Prerequisite: MUCP 4670 or consent of instructor

Web site: <http://cemi.music.unt.edu/5680>

Course Overview

Description

This course will develop an historical, technical, and aesthetic context for the art of electroacoustic music. Students will do practical hands-on projects with actual technologies of different periods (or approximations thereof) as they study the music and ideas of composers who used these technologies. Readings, listenings, and class discussions will be balanced with creative projects. Midterm and final (cumulative) examinations will be given.

Objectives

Students completing this course will be:

- Knowledgeable about the history and development of music technologies and practices
- Familiar with traditional EA music techniques and their modern counterparts
- Conversant with sounds and aesthetics of EA music from many different times and places
- Aware of current trends in music technologies and aesthetics, and their historical context

Materials

- Data storage: portable drives, keychain drives, CD-R, DVD-R, server space, etc.
- Studio access to CEMI studios 2009 and 2013
- Freeware downloads to your own computers

Textbooks

• Thom Holmes, *Electronic and Experimental Music: Technology, Music, and Culture* will be the primary textbook for this course.

• Christopher Cox and Daniel Warner (ed's), *Audio culture: readings in modern music*; Curtis Roads, *The computer music tutorial*; Joel Chadabe, *Electric sound: the past and promise of electronic music*; and Miller Puckette, *Theory and techniques of electronic music* will also be on

reserve and are valuable resources. Puckette's book is also available on line at <http://www-crcra.ucsd.edu/~msp/techniques.htm> for free.

- Other readings will be made available in the Music Library reserves or on line.

Reading and Listening Assignments

Weekly reading and listening assignments will be made; other readings and listenings will be recommended. The materials will be available from library reserves and/or on line. Even if mp3 versions are available on line it is recommended to listen at full fidelity, with minimal distractions, in the library.

Each week each student will write a short essay (800-1000 words) about one of the pieces in the week's listening assignment. These should be pithy and focused essays about the music, with no editorializing, no backstory, and no wasted verbiage. Your mission: to determine and describe the essential features of the work as you hear them, and relate them to their technological, historical, and aesthetic context. This is an opportunity to hone the valuable skills of analytical listening and description.

Graduate students will also write two medium-length essays (2000-3000 words) on assigned topics, one before and one after midterm.

Practicum Projects

Regularly assigned projects will involve practical tasks exploring particular technologies and concepts. Many of these projects will be assigned as team efforts – keep an eye out for your ideal collaborators within the class. These will be opportunities to learn, hands-on, things you just can't learn from books. They may also produce interesting artwork.

Examinations

Midterm and final exams will be cumulative and will cover the materials studied in class in a "scattershot" manner. Anything discussed or played in class is fair game, as is anything in the assigned readings. Regular listening assignments will identify "required listening" works that may appear on exams.

Course Policies

Grading

Essays	20% UG, 30% grad
Projects	30% UG, 20% grad
Midterm exam	15%
Final exam	25%
Class participation	10%

Attendance policy

This course moves fast and covers a lot of ground. Regular attendance is expected, and the course will not slow down to help you catch up. If you must miss a class, notify the instructor in advance and have a good reason. Consult the instructor during office hours if you missed any material,

either when you were present or absent. Persistent absence will affect your grade for class participation. In case of 6 or more unexcused absences, the instructor reserves the right to summarily assign you a failing grade for the course.

Academic dishonesty policy

see also http://www.unt.edu/policy/UNT_Policy/volume3/18_1_11.html

- 1) Cheating. The term “cheating” includes, but is not limited to:
 - (a) use of any unauthorized assistance in taking quizzes, tests, or examinations;
 - (b) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
 - (c) the acquisition, without permission, of tests, notes or other academic material belonging to a faculty or staff member of the university;
 - (d) dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s).
 - (e) any other act designed to give a student an unfair advantage.
- 2) Plagiarism. The term “plagiarism” includes, but is not limited to:
 - (a) the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgement and
 - (b) the knowing or negligent unacknowledged use of materials prepared by another person or by an agency engaged in the selling of term papers or other academic materials.

Disability policy

see also http://www.unt.edu/policy/UNT_Policy/volume2/6_8_3.html

Individuals qualifying under the Americans with Disabilities Act (ADA) who need special assistance to participate in a program, service or activity sponsored by the University Union are asked to contact the Verde Scheduling Office, a minimum of three business days in advance of when they will need the requested assistance to allow time for the request to be handled in an appropriate manner. The Verde Scheduling Office is located on the level 2 of the University Union. Telephone: (940) 565-3804, 565-3806 or TDD access through Relay Texas 1-800-735-2989.

Student Behavior in the Classroom

Student behavior that interferes with an instructor’s ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at www.unt.edu/csrr.

Course Themes

Computer music is a nexus of perspectives: engineer, inventor, composer, performer, theorist, listener. Musical goals, technological issues, and aesthetic insights merge as the art develops. This course will be organized primarily by musical goals.

Musical goals

- **invention**, development and practice of **new performance modalities** (instruments, interfaces)
- **extension** of timbre and behavior with **meta- and hyper-instruments**
- **integration** with traditional performance situations
- **manipulation of reality** (time, space, identity, physics)
- **construction of new models** of music (time, timbre, orchestration, rhythm, pattern, structure, transformation, relationship of materials, performance)
- **machine agency**, degrees of interactivity
- **expansion and combination** of media, persons, roles, locations
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Technological issues

- **redirection** of non-music technologies to meet artistic/sonic goals
- levels of **generalization**: instruments, meta-instruments, control structures, development environments, and computer languages
- **usability** and **backwards compatibility**: adapting familiar interface designs to novel technological frameworks
- **research** and **commercialization**: symbiotic development of standards and tools for control/integration, and the “trickle-down” effect from the laboratory to the store

Aesthetic insights

- physical, psychological, and dramatic implications of **disembodied sound** (what’s behind the veil?)
- **adaptations and cyborgs**: the ongoing multivalent communications loop between humans and machines (also between cognoscenti and luddites)
- who cares if it listens? **machine agency** and (versus?) optimal output
- **reinvention and recycling** of timbre, time, style, idea (is novelty still possible?)
- cultural **cross-fertilization** between experimental and popular musics (to groove or not to groove?)
- saturation (and other thresholds) of **cognitive, perceptual, and auditory bandwidth**
- from the **emancipation of all sounds** to the **equivalence of all data**

Course Plan (subject to change!)

<u>Week</u>	<u>Date</u>	<u>Topics and Assignments</u>
1	8/28 8/30	introduction, overview musical goal: new performance modalities
2	9/04 9/06	technologies: tone generator, theremin, turntable; life with and without recordings <i>project 1 assigned</i> approaches to listening; techniques of description
3	9/09 9/11 9/13	musical goal: discovering the sound object the early studio as performance environment <i>graduate paper 1 assigned</i> <i>project 1 presentations: imaginary instrument proposals</i>
4	9/16 9/18 9/20	musical goal: storage and manipulation of time (aka “recording”) technologies: tape deck basics, editing/splicing basics, looping <i>project 2 assigned</i> (tech ctd) multi-tracking, sync playback, bouncing and mixing
5	9/23 9/25 9/27	(tech ctd) feedback, more mixer techniques, studio practices, project workflow musical goal: meta-instrumentality and instrument design <i>graduate paper 1 due</i> technologies: voltage controlled analog synthesis
6	9/30 10/02 10/04	(tech ctd) the module-patching model, pd, synthorama and basics of voltage control <i>project 2 presentations: tape composition concert</i> CEMcircles Festival begins (see http://cemi.music.unt.edu/cemi/cemicircles for details)
7	10/07 10/09 10/11	(tech ctd) voltage control, controllers, modules (osc, scope, vca, env, rigmod, noise, filters, lfo, rvb) <i>project 3 assigned</i> (tech ctd) reverse-engineering commercial performance synths review session for midterm
8	10/14 10/16 10/18	MIDTERM EXAM (tech ctd) the digital revolution, aka non-linear synthesis techniques (tech ctd) sampling, digital recording/editing, and the random access revolution
9	10/21 10/23 10/25	aesthetics: popular music discovers experimental music technologies: why everyone wanted MIDI, and what they discovered (tech ctd) the birth of the DAW and the MIDI rig – but not the death of the Big Computer?
10	10/28 10/30 11/01	<i>project 3 presentations: analog performance synth showdown</i> musical goal: new models of music (tech issue: levels of generalization) technologies: circular buffer as temporary storage of time = delay line
11	11/04 11/06 11/08	(tech ctd) delay with feedback, comb filtering; how a flanger works <i>project 4 assigned</i> (tech ctd) multitap rhythm delay, chorus; moving delay as transposer (tech ctd) harmonizer: windowed overlap-add; implies and leads to granulation
12	11/11 11/13 11/15	musical goal: machine agency technology: granular composition – controls, automation, recomposition <i>project 4 presentations: delay improvisations/recompositions concert</i>
13	11/18 11/20 11/22	(tech ctd) Gaussian controls, envelopes on data and meta-data, live control of live granulation <i>project 5 assigned</i> (tech ctd) overlap-add in the frequency domain: short-time Fourier transforms (tech ctd) fft processing techniques: spectrogram, noise reduction, timbre stamping
14	11/25 11/27	(tech td) fft binshifting, transposition (gizmo~ in Max), pitch tracking, autotune analog vocoder, convolution vocoder, phase vocoder
15	12/02 12/04 12/06	<i>project 5 presentations: granulation and fft party!</i> review session for final Reading Day (no classes)
16		Friday, December 13, 10:30 – 12:30 p.m.: FINAL EXAM (cumulative)