

**MUCP 4680/5680**  
**History and Techniques of Electroacoustic Music**  
**Spring 2017**

Time and place: TuTh 9:30 – 11:50 am, MU 2009  
Instructor: Dr. Andrew May  
Office: MU 1003  
Phone #: (940) 891-6816  
E-mail: andrew.may@unt.edu  
Office hours: Monday 9 am; Wednesday 8 am; Friday 8 am  
Final exam: Thursday, May 11, 8:00 – 10:00 am  
Prerequisite: MUCP 4670 or consent of instructor  
Web site: <http://cemi.music.unt.edu/5680>  
Library carrel: 419

**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 the historical contexts conditioning current trends in electroacoustic music

**Materials**

- Data storage: portable drives, keychain drives, cloud storage, server space, etc.
- Studio access to CEMI studios 2009 and 2013

**Textbooks**

**Required**

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

**Optional** (highly recommended)

- 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*
- 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-crca.ucsd.edu/~msp/techniques.htm>

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.

#### **Undergraduate students (MUCP 4080)**

Each week you 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 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.

#### **Graduate students (MUCP 5080)**

Each week you will choose one work from the listening that you are more familiar with, and one that is newer to you, and write a short essay (800-1000 words) comparing the techniques and sound worlds of the two pieces and putting them in aesthetic and historical context. These should be pithy and focused essays with no editorializing, no backstory, and no wasted verbiage. Your mission: to expand and fine-tune your knowledge of repertoire and connect what you hear with its technological, historical, and aesthetic context. 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 specific 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 – it has happened many times!

### 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.

### Grading

<u>Element</u>	<u>MUCP 4080</u>	<u>MUCP 5080</u>
Essays	20%	30%
Projects	30%	30%
Midterm exam	15%	10%
Final exam	25%	20%
Class participation	10%	10%

### Attendance

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 Integrity

Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam [or specify alternative sanction, such as course failure]. Additionally, the incident will be reported to the

Dean of Students, who may impose further penalty. According to the UNT catalog, 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 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); or e. any other act designed to give a student an unfair advantage. 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 acknowledgment; and b. the knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

LINK: <http://facultysuccess.unt.edu/academic-integrity>

### **Student Behavior**

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 Dean of Students 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.

LINK: Student Code of Conduct - <https://deanofstudents.unt.edu/conduct>

### **Access to Information: Eagle Connect**

Your access point for business and academic services at UNT occurs at [my.unt.edu](http://my.unt.edu). All official communication from the university will be delivered to your Eagle Connect account. For more information, please visit the website that explains Eagle Connect.

LINK: [eagleconnect.unt.edu/](http://eagleconnect.unt.edu/)

### **ADA Statement**

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation.

LINK: [disability.unt.edu](http://disability.unt.edu). (Phone: (940) 565-4323)

### **Spring Semester Academic Schedule (with Add/Drop Dates)**

<http://catalog.unt.edu/content.php?catoid=15&navoid=1228>

### **Final Exam Schedule**

<http://registrar.unt.edu/exams/final-exam-schedule/spring>

## **Financial Aid and Satisfactory Academic Progress**

### **Undergraduates**

A student must maintain Satisfactory Academic Progress (SAP) to continue to receive financial aid. Students must maintain a minimum 2.0 cumulative GPA in addition to successfully completing a required number of credit hours based on total registered hours per term. Students cannot exceed attempted credit hours above 150% of their required degree plan. If a student does not maintain the required standards, the student may lose their financial aid eligibility.

Students holding music scholarships must maintain a minimum 2.5 overall cumulative GPA and 3.0 cumulative GPA in music courses.

If at any point you consider dropping this or any other course, please be advised that the decision to do so may have the potential to affect your current and future financial aid eligibility. It is recommended that you to schedule a meeting with an academic advisor in your college or visit the Student Financial Aid and Scholarships office to discuss dropping a course being doing so.

LINK: <http://financialaid.unt.edu/sap>

### **Graduates**

A student must maintain Satisfactory Academic Progress (SAP) to continue to receive financial aid. Students must maintain a minimum 3.0 cumulative GPA in addition to successfully completing a required number of credit hours based on total registered hours per term. Music scholarships require a 3.5 cumulative GPA. Students cannot exceed maximum timeframes established based on the published length of the graduate program. If a student does not maintain the required standards, the student may lose their financial aid eligibility.

If at any point you consider dropping this or any other course, please be advised that the decision to do so may have the potential to affect your current and future financial aid eligibility. It is recommended you schedule a meeting with an academic advisor in your college, an advisor in UNT-International or visit the Student Financial Aid and Scholarships office to discuss dropping a course.

LINK: <http://financialaid.unt.edu/sap>

### **Retention of Student Records**

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. You have a right to view your individual record; however, information about your records will not be divulged to other individuals without the proper written consent. You are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the university's policy in accordance with those mandates.

Link: [essc.unt.edu/registrar/ferpa.html](http://essc.unt.edu/registrar/ferpa.html)

## Course Themes

*Computer music is a nexus of perspectives: engineer, inventor, composer, performer, theorist, listener. Musical goals, technological issues, and aesthetic questions merge as the art develops.*

### *Musical goals*

- invention, development and practice of **new instruments, meta- and hyper-instruments**
- **integration** of new opportunities with existing performance situations
- **manipulation of perceived reality** (time, space, identity, physics)
- **construction of new models** of music (time, timbre, pattern, structure, transformation)
- **machine agency**, degrees and kinds of interaction

### *Technological issues*

- **redirection** of non-music technologies for musical purposes
- **design for usability**: integration of concepts and technologies with affordances
- levels of **generalization**: instruments, techniques, controls, environments, languages
- **backwards compatibility**: new techniques, old interfaces
- **research** and **commercialization**: symbiosis between invention and distribution

### *Aesthetic questions*

- psychological and dramatic implications of **disembodied sound**
- **adaptations and cyborgs**: how working with machines changes us as musicians
- who cares if it listens? **machine agency** and its musical implications
- **reinvention and recycling** of timbre, time, style, idea (is novelty still possible?)
- cultural **cross-fertilization** between high art and pop music (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>Themes, Topics and Assignments</u>
1		<b>new instruments lead to new ways of making and hearing sound</b>
	1/17	introduction, themes; instrumentality, meta- and hyper-instrumentality
	1/19	designing new instruments; properties and opportunities of electronics
2		<b>sound reproduction, broadcast, and storage transform the experience of music</b>
	1/24	technologies: tone generator, theremin, turntable; life with and without recordings <i>project 1 assigned</i>
	1/26	“reduced listening” and other ways to describe of the experience of sound
3		<b>the sound object arises from a parametric environment for manipulating stored sound</b>
	1/31	the early studio as performance environment, Schaeffer’s conceptualization of sound <i>graduate paper 1 assigned</i>
	2/2	<i>project 1 presentations: imaginary instrument proposals</i>
4		<b>radio and recording studios incubated the practices of electroacoustic music</b>
	2/7	technologies: tape deck basics, editing/splicing basics, looping <i>project 2 assigned</i>
	2/9	(tech ctd) multi-tracking, sync playback, bouncing and mixing
5		<b>the studio as composition tool demands integration and automation of controls</b>
	2/14	(tech ctd) feedback, more mixer techniques, studio practices, project workflow <i>graduate paper 1 due</i>
	2/16	voltage control applications in mixing, tape transports, processing and synthesis

- 6 **new control designs extend and question the keyboard instrument paradigm**  
 2/21 the module-patching model, pd, synthorama and voltage control synths  
 2/23 *project 2 presentations: tape composition mini-concert*
- 7 **the voltage controlled synthesizer is the model for current digital systems**  
 2/28 technologies: standard modules (osc, scope, vca, env, ringmod, noise, filters, lfo, rvb)  
*project 3 assigned*  
 3/2 (tech ctd) reverse-engineering commercial performance synths into modules
- 8 **from analog to digital, and an exam**  
 3/7 review of basics of digital audio; recording and filtering in the digital domain  
 3/9 **MIDTERM EXAM**
- ..... 3/13 – 3/17: **Spring Break** .....
- 9 **digital music data are disembodied, precise, copiable, recallable, and non-linear**  
 3/21 performing data: MIDI, patch libraries, digital FM synthesis, samples, delay units  
 3/23 *project 3 presentations: analog performance synth showdown*
- 10 **the digital studio is totally different, but its interfaces emulate the analog world**  
 3/28 digital sampling and the DAW: one technology, two packages for two purposes  
 3/30 techniques using a circular buffer: filter, delay, comb filter, flanger, chorus  
*project 4 assigned*
- 11 **overlap-add techniques: micro-management of sound allows freedom in time**  
 4/4 overlap-add harmonizer (alias rotating-head tape harmonizer)  
 4/6 granulation (circular delay or fixed buffer) for replay, recomposition, transformation
- 12 **the technique is only as interesting as its control structure**  
 4/11 granulation: randomization, automation, and live control of live sound  
*graduate paper 2 assigned*  
 4/13 *project 4 presentations: delay improvisations/recompositions mini-concert*
- 13 **short-time Fourier transforms: from grains of sound to grains of spectra**  
 4/18 theory and implementation of FFT, overlap/add STFT  
 4/20 fft processing techniques: binshifting, transposition, timbre stamping, denoising
- 14 **tracking phases over time: the phase vocoder and its applications**  
 4/25 comparing the analog vocoder, the convolution vocoder, and the phase vocoder  
*graduate paper 2 due*  
 4/27 vocoder-based techniques: time stretching, pitch shifting, pitch tracking
- 15 5/2 *project 5 presentations: granulation and fft party!*  
 5/4 review session for final
- 16 **Thursday, May 11, 8:00 – 10:00 p.m.: FINAL EXAM (cumulative)**