

LSU - MUS 3745 - Introduction to Computer Music - Course Syllabus - Spring 2014

Class time: 10:30 – 11:20 am, M W F

Room: Music and Dramatic Arts, 248

Lab: School of Music, 203

Ben Taylor - btayl61@lsu.edu - 434-249-5008

Office Hours Monday 4-5 pm

Zak Berkowitz - zberko1@lsu.edu - 575-590-3602

Office Hours By Appointment

Supervising Professor: Stephen David Beck

Final Concert: April 28, 2014 4pm

Final Exam: Monday, May 5, 2014 10am - Noon

Materials

All readings should be completed by the day listed on the syllabus

Required:

Electronic and Experimental Music, Fourth Edition, Thom Holmes (required, at LSU Bookstore)

Recommended:

An Introduction to Music Technology, Dan Hosken

Supplementary:

Audio Culture, Christopher Cox and Daniel Warner (posted as PDFs to Moodle)

The Music of John Cage, James Pritchett (posted as PDFs to Moodle)

Course Description

In this class, you will learn about the history and practice of electronic music from the past 100 years. We will tackle advanced concepts of composition and media in order to enable you to create contemporary music that can stand the test of time. Topics will include principles of digital audio and digital audio workstations, tape music, sound design, music synthesis, signal processing, contemporary composition, and sound art.

Course Outline

The course will be divided into 1-week units covering specific studios, composers, and technologies. Each week will consist of readings, lectures, listening assignments, and hands-on demonstrations. Students will be responsible for quizzes, presentations on the readings, and keeping an online listening journal. In addition, each student will develop several electronic audio compositions that will serve as first-hand research into the techniques discussed in class.

Part 1: Circuits

Week 1 – Introduction

Jan 15 – What is Electroacoustic/Computer Music?

Early Electronic Instruments - Telharmonium, Ondes Martenot, Theremin

Listen: Steve Reich, *Come Out*

Listen: Olivier Messiaen, *Oraison*

Jan 17 – Tour of Lab Equipment, Theremin Demonstration

**** Meet In Lab @ School of Music 203 ****

Week 2 – Futurism & Noise

Jan 20 – MLK Holiday, NO CLASS

Jan 22 – Futurism, Luigi Russolo, Intonarumori, Noise

Additional Precedents: Anton Webern, Edgar Varese, Harry Partch, John Cage

Listen: Luigi Russolo, Intonarumori Demo

Listen: Anton Webern, Symphony Op. 21

Listen: John Cage, Sonatas and Interludes

Listen: Edgar Varese, Ionisation

Luigi Russolo, "The Art of Noises: Futurist Manifesto," *Audio Culture* 10-14

John Cage, "The Future of Music: Credo," *Audio Culture* 25-28

Jan 24 – Sound Walk and Recording

Hosken, "Generation and Propagation," 7-9

Week 3 – Musique Concrète in Paris, France

Jan 27 – Pierre Schaeffer at the RTF Studio in Paris, *musique concrète*, *l'objet sonore*

Listen: Pierre Schaeffer, Etude aux Chemins de Fer

Listen: Pierre Schaeffer and Pierre Henry, Symphony Pour un Homme Seul

Holmes, "Musique Concrète in France," 49-60

DUE: Assignment 1 - Listening Comparison

Jan 29 – Introduction to DAWs

Brian Eno, "The Studio as a Compositional Tool," *Audio Culture* 127-130

Hosken, "Sound Properties and the Waveform View," 17-22 & 25-26

Hosken, Chapter 5, 72-85

Jan 31 – Early Tape Techniques in France and North America

Listen: Hugh Le Caine, Dripsody

Listen: Vladimir Ussachevsky, Sonic Contours

Listen: Otto Luening, Low Speed

Holmes, "Tape Composition and Fundamental Concepts," 153-174

Pierre Schaeffer, "Acousmatics," *Audio Culture* 76-81

Week 4 – Elektronische Musik in Cologne, Germany

Feb 3 – Karlheinz Stockhausen at the WDR Studio in Cologne

Science of Sound, Acoustics, Additive Synthesis, Subtractive Synthesis, Sine Walk

Listen: Karlheinz Stockhausen, Studie I

Listen: Karlheinz Stockhausen, Gesang Der Jünglinge

Hosken, "Electronic Sound Production" 198-204
Hosken, "Synthesis Methods," 216-223

Feb 5 – Stockhausen Continued
Listen: Karlheinz Stockhausen, Kontakte
Listen: Karlheinz Stockhausen, Hymnen
Listen: Karlheinz Stockhausen, Stimmung
Listen: Karlheinz Stockhausen, Kurzwellen
Holmes, "*Elektronische Musik* in Germany," 61-76

Feb 7 – Studio Lesson
DUE: Listening Journal

Week 5 – American Experimentalism: Understanding John Cage

Feb 10 – **Quiz 1**
John Cage 1912-1950s, rhythmic structure, silence, chance, indeterminacy
Listen: John Cage, Imaginary Landscapes
Listen: John Cage, Williams Mix
Listen: John Cage, Water Walk

Feb 12 – John Cage 1950s-1992, silence, happenings, simultaneity, duration
Listen: John Cage, 4'33"
Listen: John Cage, Child of Tree
Listen: John Cage, Inlets
Listen: John Cage & Marcel Duchamp, Sculptures Musicales
Holmes, "John Cage and Magnetic Tape" 100-109 and "Live Electronic Music," 411-417
Pritchett, "Something Like a Hidden Glimmering: John Cage and recorded sound", p. 4

Feb 14 – **Project 1 Due**, in-class listening and critique

Week 6 – American Experimentalism: Institutions in New York and San Francisco

Feb 17 – Three visions of musical circuitry: Mark II Synth, Buchla Box, David Tudor
Listen: Milton Babbitt, Composition for Synthesizer
Listen: Morton Subotnick, Silver Apples of the Moon
Listen: John Cage, Variations II (performed by David Tudor)
Holmes, "Columbia-Princeton Studio, 110-116"
Pritchett, "David Tudor as Composer/Performer in John Cage's Variations II"

Feb 19 – Performative Electronics in 1960s America
San Francisco, CA: SF Tape Music Center, Pauline Oliveros, Morton Subotnick, Steve Reich
Ann Arbor, MI: Sonic Arts Union, ONCE Festival, Robert Ashley, Gordon Mumma
Listen: Pauline Oliveros, I of IV
Listen: Steve Reich, Piano Phase
Listen: Robert Ashley, The Wolfman
Listen: Gordon Mumma, Hornpipe

Holmes, "The Once Festivals: A Coalition of Electronic Music Pioneers,"
"Leading Indicators for the Future: The Sonic Arts Union," 417-430
Holmes, "The San Francisco Tape Music Center," 392-395
Pauline Oliveros, "Some Sound Observations," *Audio Culture* 102-106

Feb 21 – Studio Lesson

Part 2: Computers

Week 7 – Digitization at Bell Labs

Feb 24 – Early Computer Music, Max Matthews, Laurie Spiegel, Charles Dodge
Listen: Max Matthews's computer arrangement of Daisy Bell by Harry Dacre
Listen: Laurie Spiegel, East River Dawn
Listen: Charles Dodge, Speech Songs
Holmes, "Foundations of Computer Music," 273-284

Feb 26 – FM Synthesis, MIDI, Yamaha, Studio Lesson
Listen: John Chowning, Stria
Holmes, "MIDI," 258-268

Feb 28 – Studio Lesson

Week 8

Mar 3 & 5 – MARDI GRAS

Mar 7 – Studio Lesson
DUE: Listening Journal

Week 9 – Digital Synthesis

Mar 10 – **Quiz 2**
DUE: Rough Draft of Composition 2 (submit to Moodle)
Wavetable Synthesis, Granular Synthesis
Listen: Iannis Xenakis, Analogique A-B
Listen: Curtis Roads, Point Line Cloud

Mar 12 – Physical Modeling, Spectralmorphing, Spatialization and Ambisonics
Listen: Jean-Claude Risset, Mutations
Listen: Dennis Smalley, Pentes
Listen: Jonty Harrison, Unsound Objects
Listen: Edgar Varese, Poeme Electronique
Holmes, "Varese and the Listener's Experiment," 355-362

Mar 14 – **Project 2 Due**, in-class listening and critique

Week 10 – Computer-Assisted Composition

Mar 17 – Iannis Xenakis, Markovian chains, algorithmic music, League of Automatic Music Composers

Listen: David Cope, Emmy Bach Chorale

Listen: James Tenney, Spectral Cannon for Conlon Nancarrow

Listen: League of Automatic Music Composers, Dovetail

Listen: League of Automatic Music Composers, Gamelan

Holmes Chapter 10, 296-318

Mar 19 – Spectral Analysis, Gerard Grisey, Tristan Murail, IRCAM Software, Lilypond

Listen: Gerard Grisey, Jour, Contre-Jour

Holmes, Chapter 9 "IRCAM" section, 281-284

Mar 21 – Studio Lesson

Part 3: Media

Week 11 – Sound Art

Mar 24 – Alvin Lucier, David Tudor, Christian Marclay, Oval, Janet Cardiff, Peter Traub

Listen: David Tudor, Rainforest IV

Listen: Alvin Lucier, Music for Solo Performer

Listen: Christian Marclay, Records

Listen: Oval, Untitled from *Ovalcommers*

Watch: Janet Cardiff, Sound Walk

Listen: Peter Traub, Bits & Pieces

Mar 26 – Bring in an object to resonate!

Make: David Tudor, Rainforest IV

Make: Alvin Lucier, I Am Sitting In A Room

Mar 28 – Individual meetings about Project 3

Week 12 – DJing, Plunderphonics, and Ambient Music

Mar 31 – Sampling, DJing, and collecting as composing

Listen: Brian Harnetty, Pacing A Garden

Listen: The Avalanches, Since I Left You

Listen: DJ Shadow, Endtroducing

Lewis Hyde, Introduction to *The Gift*

John Oswald, "The Ethics of Musical Debt" *Audio Culture* 131-137

Apr 2 – Ambient music, graphic scores

Listen: Brian Eno, Music for Airports I

DUE: Assignment 2 - Graphic Score

Apr 4 – Studio lesson

Week 13 – Composing with Media

Apr 7 – Process of Composing
Morton Feldman, "The Anxiety of Art"

Apr 9 – Sharing contemporary electronic music

Apr 11 – Studio Lesson

SPRING BREAK April 14-20

Week 14 – Current Electroacoustic Performance

Apr 21 – Mark Applebaum, John Bischoff, Electroacoustic Instrument Building
Watch: Mark Applebaum, TEDx
Listen: John Bischoff, Piano 7Hz

Apr 23 – Mobile Music, Network Music, PLOrk, Live Coding, Web Audio
Watch: Charlie Roberts, Live Coding
Watch: Andrew Sorensen, Live Coding
Read: TOPLAP Manifesto
Watch: Stanford Mobile Phone Orchestra (MoPho)

Apr 25 – **Project 3 Due**, in-class listening and critique

Week 15 – Review

Apr 28 – **High Voltage Concert, 4pm**, School of Music Recital Hall
** Everyone is required to help with setup for all hours that they are able! **

Apr 30, May 2 – Summary and Review

Finals Week

May 5 – **Final Exam, 10am-Noon**

Listening List

Olivier Messiaen, Oraison
Luigi Russolo, Intonarumori Demo
Anton Webern, Symphony Op. 21

John Cage, Sonatas and Interludes
Edgar Varese, Ionisation
Pierre Schaeffer, Etude aux Chemins de Fer
Pierre Schaeffer and Pierre Henry, Symphony Pour un Homme Seul
Hugh Le Caine, Dripsody
Vladimir Ussachevsky, Sonic Contours
Otto Luening, Low Speed
Karlheinz Stockhausen, Studie I
Karlheinz Stockhausen, Gesang Der Jünglinge
Karlheinz Stockhausen, Kontakte
Karlheinz Stockhausen, Hymnen
Karlheinz Stockhausen, Stimmung
Karlheinz Stockhausen, Kurzwellen
John Cage, Imaginary Landscapes
John Cage, Williams Mix
John Cage, Water Walk
John Cage, 4'33"
John Cage, Child of Tree
John Cage, Inlets
John Cage & Marcel Duchamp, Sculptures Musicales
Milton Babbitt, Composition for Synthesizer
Morton Subotnick, Silver Apples of the Moon
John Cage, Variations II (performed by David Tudor)
Pauline Oliveros, I of IV
Steve Reich, Come Out
Steve Reich, Piano Phase
Robert Ashley, The Wolfman
Gordon Mumma, Hornpipe
Max Matthews's computer arrangement of Daisy Bell by Harry Dacre
Laurie Spiegel, East River Dawn
Charles Dodge, Speech Songs
John Chowning, Stria
Iannis Xenakis, Analogique A-B
Curtis Roads, Point Line Cloud
Jean-Claude Risset, Mutations
Dennis Smalley, Pentas
Jonty Harrison, Unsound Objects
Edgar Varese, Poeme Electronique
David Cope, Emmy Bach Chorale
James Tenney, Spectral Cannon for Conlon Nancarrow
League of Automatic Music Composers, Dovetail
League of Automatic Music Composers, Gamelan
Gerard Grisey, Jour, Contre-Jour
David Tudor, Rainforest IV
Alvin Lucier, Music for Solo Performer
Christian Marclay, Records
Oval, Untitled from *Ovalcommers*
Janet Cardiff, Sound Walk
Peter Traub, Bits & Pieces
David Tudor, Rainforest IV
Alvin Lucier, I Am Sitting In A Room
Brian Harnetty, Pacing A Garden
The Avalanches, Since I Left You
DJ Shadow, Endtroducing
Brian Eno, Music for Airports I
Mark Applebaum, TEDx
John Bischoff, Piano 7Hz
Charlie Roberts, Live Coding
Andrew Sorensen, Live Coding
TOPLAP Manifesto
Stanford Mobile Phone Orchestra (MoPho)

Grading Criteria

Course grades will be determined by the following formula:

| | |
|---------------------------------------|-----------|
| Class Participation and Presentations | 10% |
| Assignments 1 & 2 | 5% each |
| Online Listening Journal | 10% |
| Composition Projects (3) | 10% each |
| Section Quiz (2) | 7.5% each |
| Final Exam | 15% |

Each grading criteria will have a scoring base of 100 points. Course grades will be averaged at the end of the semester and awarded on the following scale:

| | |
|---|--------------|
| A | 90.0 – 100.0 |
| B | 80.0 – 89.9 |
| C | 70.0 – 79.9 |
| D | 60.0 – 69.9 |
| F | <60 |

Project 1 – Due February 14

Procedure

1. Record 3 short (maximum 1-3 second) audio samples using the Sony Digital Audio Recorder.
2. Clean each sample with Audacity, eliminating unwanted noise and extraneous sounds from beginning or end of the desired sample.
3. Apply the concepts of basic tape manipulation to create a 60-second *musique concrète* piece with Studio One, using at least 3 different types of manipulation common to that era (and only those): **splicing, changing sample speed, reversing, enveloping**. The composition should have a beginning, middle, and end.

How to Submit

Drop the following items into the Project 1 folder on the main SoM 203 machine desktop. Put all files in one folder that is titled LastName_Project1.

1. Final piece (Studio One project)
2. Original sound samples
3. Written paragraph on concept, method and techniques used

If you would like, you can export your project as a wav or aiff file and upload it to our SoundCloud group:

MUS 3745 @ LSU

soundcloud.com/groups/mus-3745-lsu

(The link is also on Moodle. You will have to create a SoundCloud account to do this.)

Project 2 – Due March 14

Procedure

1. Create electronic samples using synthesis techniques (Additive, FM, AM, etc).
2. Apply the concepts of basic tape manipulation to create a 60 to 90-second composition with Studio One.
3. Include at least 3 different types of synthesis and at least 3 different types of manipulation.

How to Submit

Drop the following items into the Project 2 folder on the main SoM 203 machine desktop. Put all files in one folder that is titled LastName_Project2.

1. Final piece (Studio One project)
2. Original sound samples
3. Written paragraph on concept, methods, and techniques used

In addition, you may export your project as a wav or aiff file and upload it to our SoundCloud group.

Project 3 – Due April 25

Procedure

1. Use techniques discussed in class, including any of the following: audio recording, digital synthesis techniques, quad spatialization, sampling, and/or spectral manipulation.
2. Apply contemporary music concepts to create a 3 - 4 minute composition with Studio One.

How to Submit

Drop the following items into the Project 3 folder on the main SoM 203 machine desktop. Put all files in one folder that is titled LastName_Project3.

1. Final piece (Studio One project)
2. Written paragraph on concept, method and techniques used

In addition, you may export your project as a wav or aiff file and upload it to our SoundCloud group.

Qualified students seeking accommodations under the Americans With Disabilities Act are required to self-identify with the appropriate campus office.

This is a certified Communication-Intensive (C-I) course which meets all of the requirements set forth by LSU's Communication across Curriculum program, including:

- instruction and assignments emphasizing informal and formal writing and speaking;
- teaching of discipline-specific communication techniques;
- use of draft-feedback-revision process for learning;
- practice of ethical and professional work standards;
- at least 40% of the course grade rooted in communication-based work; and
- a student/faculty ratio no greater than 35:1

Students interested in pursuing the LSU Distinguished Communicators certification may use this C-I course for credit. For more information about this student recognition program, visit www.cxc.lsu.edu