

SYNTHESIS AND SOUND DESIGN

University of Oklahoma, Spring 2006

MUTH 4970/5970 section 900 (3 hours)

Instructor: Jonathan Haek

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Office: CMC 202D

Office Hours: By appointment

Telephone: 325-5968

Meeting Times:

Every Monday and Wednesday, 4:30-6:20 PM, CMC 006A

Materials:

- Headphones with 1/4" stereo (TRS) plug
- CD-RWs or Flash/Jump Drive for backing up work
- There is no required textbook for this course.
- Several books including *Computer Music: Synthesis, Composition, and Performance* by Dodge and Jerse, *Audio Culture: Readings in Modern Music* edited by Cox and Warner, and *On Sonic Art* by Trevor Wishart will be available on reserve in the Fine Arts Library. These books will be available for your reference, and for periodic reading assignments.
- Several manuals are available in the MIDI lab, including manuals for the K2VX, Digital Performer, and Finale. **These may not be removed from the lab.** The Max and MSP documentation resides on the three computers which have the Max/MSP program installed. You are welcome to copy these files to use at home, or print them out.
- Be sure to bring paper, pencil, and eraser to class for note taking.

Goal: It is the goal of this course that each student, upon successful completion, have a working knowledge of basic sound synthesis techniques, and be able to use today's most powerful computer software for practical application of signal processing techniques. To reach this goal, each student must successfully accomplish the objectives described below. Accomplishment will be measured through quizzes, assignments, and projects as indicated in the weekly schedule.

Objectives:

- Describe and explain basic digital audio concepts
- Describe and explain basic sound synthesis techniques including additive, ring modulation, AM, and FM synthesis
- Program and debug custom patchers in Max/MSP
- Code and compile successful orchestras and scores in CSound
- Listen to computer music and discuss issues surrounding the use of technology in music

Grading:

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|---------------|-----|
| Assignments | 40% |
| Quizzes | 20% |
| Final Project | 25% |
| Participation | 15% |

IMPORTANT:

- Since so much of this course is practical in nature, attendance is extremely important. In order to receive full credit for the participation portion of your grade, **attendance and participation in ALL class periods is mandatory.**
- Excused absences must be approved by me **IN ADVANCE**, and include, but are not limited to, death in the family, hospitalization, and participation in mandatory University sponsored activities. An **occasional** absence due to sickness may be excused, provided that notice is given **PRIOR** to the class to be missed (via e-mail) and a doctor's note is supplied, if requested.
- Assignments are due at the **beginning** of class (4:30) on the date indicated in the weekly schedule. Late assignments will be penalized **10% for each day** or portion of a day that they are late.
- **You MUST be present for the final class period: no make-ups will be given.**
- **Do NOT bring cell phones or pagers to class.** If you must, do not leave them in silent mode, **turn them OFF.** We will observe a zero-tolerance policy for beeps, rings, and buzzes.
- Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her ability should contact me as soon as possible to discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Weekly Schedule (subject to change):

Week 1

1/18 Welcome. Syllabus. Introduction to Max.

Week 2

1/23 Digital Audio Fundamentals. Max Tutorials 1-11.

1/25 Digital Audio Fundamentals. Max Tutorials 1-11.

Week 3

1/30 Digital Audio Fundamentals. Max Tutorials 1-11.

2/1 **Digital Audio Fundamentals Quiz.

Week 4

2/6 Oscillators and MSP. **Reading and Listening Discussion.**

**2/8 Oscillators and MSP. Sound Synthesis Techniques.

Week 5

2/13 Sound Synthesis Techniques.

2/15 Sound Synthesis Techniques.

Week 6

2/20 Sound Synthesis Techniques. **Assignment 1 Due.**

2/22 Sound Synthesis Techniques.

Week 7

2/27 Sound Synthesis Techniques. **Reading and Listening Discussion.**

**3/1 Sound Synthesis Techniques.

Week 8

3/6 Sound Synthesis Techniques.

3/8 Sound Synthesis Techniques. **Assignment 2 Due.

Week 9

3/13 **No School: SPRING BREAK**

3/15 **No School: SPRING BREAK**

Week 10

3/20 Sound Synthesis Techniques Review.

3/22 **Sound Synthesis Techniques Quiz.**

Week 11

3/27 CSound basics.

3/29 CSound basics. **Reading and Listening Discussion.**

Week 12

4/3 Csound basics.

4/5 CSound basics. **Final Project Proposal Due.

Week 13

4/10 Csound basics. **Assignment 3 Due.**
**4/12 Csound basics.

Week 14

4/17 Csound basics.
4/19 Csound basics.

Week 15

4/24 Cleaning and Debugging. **Assignment 4 Due.**
4/26 Cleaning and Debugging.

Week 16

5/1 Cleaning and Debugging.
**5/3 Course Review and Wrap-up.

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**\*\* ATTENTION:** class periods on these days will begin at **5:00 pm** rather than 4:30.