TECH350 : Audio DSP Theories and Techniques
TECH 350
Spring 2015

Course Information
- Time & Location : Mon/Wed 1-2:15PM @ TIMARA Studio
- Instructor : Joo Won Park
- Email : joo.won.park@oberlin.edu
- Phone : 440-775-8232
- Office Hours : Mon/Tue/Wed/Thu 10-11AM & by appointment

Overview
We will study theories and practices of audio signal processing techniques. We will make our own reverb algorithms, simulate a modular synthesizer, create physical models of instruments, build granular synthesizer, study FFT analysis resynthesis techniques, and research on the newly developed synthesis techniques. The main focus of the course is to understand the theoretical concept so that you can use them in your own composition and/or DSP algorithms.

Required Materials/Skills
- Proficiency at a modular music synthesis tools (MaxMSP, SuperCollider, Pd, etc)
- Experience in audio programming is a plus, but not required
- USB or Portable HD
- Access to TIMARA server's Tech350 folder
- Textbook: Miller Puckette, *The Theory and Technique of Electronic Music* (available for free at http://msp.ucsd.edu/techniques.htm)

Expectations
- Come to every classes with open mind and open ears. Be ready to participate in various exercises and discussions.
- If you miss more than 3 classes without proper excuses, your attendance point will be 0. If you have more than 3 unexcused tardies, your attendance point will be 0. If you miss more than 6 classes, excused or unexcused, you will not be able to pass the class.
- If an emergency or sickness prevents you from coming to the class, please contact me as soon as possible. If you have an incident that prevents you from coming to two consecutive classes, bring proper documentations (doctor's notes, official letter from x, etc)
- You are responsible for all material covered in the class regardless of your attendance record. Please come to my office hour if you need a help in catching up. Late assignments are not accepted.
- Plagiarism and other means of academic dishonor are prohibited. Please refer to Oberlin Honor Code for details at http://new.oberlin.edu/conservatory/academic-resources-and-support/honor-code.dot
- Check your Oberlin email and for updates and notifications. I can be reached much easier by email than phone. Email submission of your work is not valid unless you receive a confirmation reply from me. If you do not receive a reply from me within three days, please resend the email.

Accommodations for Students with Disabilities
Students requesting classroom accommodation should contact Office of Disability Services. Please refer to http://new.oberlin.edu/conservatory/academic-resources-and-support/disability-services.dot for details.

Grading

A+	A	A-	B+	B	B-	C+	C	C-	D	F	W
100-97	96-93	92-90	89-87	86-83	82-80	79-77	76-73	72-70	69-60	59-0	NA

- Class Attendance : 10%
- Annotated Bibliography : 10%
- Homework : 40%
- Midterm Project: 20%
- Final Project: 20%

Annotated Bibliography: There will be a list of books, articles, and music that you will have to read, listen, and summarize. Submit one before Fall Recess and another before Final Exam week.

Homework: These are short assignments to test and experiment with the subjects covered in the classes. Expect a new homework every week except for the week before midterm and final project.

Midterm and Final Project: Research on one of your favorite DSP techniques. Write a paper and make an audio/code demo.

Semester Schedule

- February
  - Week 1 : Introduction and Review
  - Week 2 : Sinusoids
  - Week 3 : Additive Synthesis
  - Week 4 : Wavetable Synthesis

- March
  - Week 5 : Practical Applications and Musical Examples 1
  - Week 6 : Filter theory
  - Week 7 : Delay and Reverb theory
    - Annotated bibliography #1 & Midterm Project Due
  - Week 8 : No class (Spring Recess)
  - Week 9 : Make your own signal processing algorithm #1
- April
  - Week 10 : Make your own signal processing algorithm #2
  - Week 11 : Dynamic processors
  - Week 12 : FFT theory
  - Week 13 : "Cutting-Edge" DSP techniques
- May
  - Week 14 : Make up classes or special topics
    - Annotated bibliography #2 Due
  - Week 15 : Final project presentation