MUST 342: Computer Music II
Max Programming
Ball State University
College of Fine Arts / School of Music
Music Theory and Composition

Class Meeting Times:

- TR 12:30 – 1:45

Location: Studio 9/Media Lab

Web Site: blackboard.bsu.edu
(and teachingmusic.keithkothman.com)
Prerequisites: MUST 242

Instructor Information:

- Instructor: Dr. Keith Kothman, MU 109B, kkothman@bsu.edu, 285-5539
    - office hours: by appointment

Materials Needed:

- *Max*, from Cycling '74 <http://www.cycling74.com>. You have two options for purchase. The cheapest is a 12-month subscription authorization for $59. Your other option is to purchase a regular (unlimited) license for $250 at a student discount. Max is also installed on all the computers of Studio 9 and all the DAW room computers, but you will benefit greatly from having your own copy. *Note: we will be using Max 6 for this class. Max 7 came out too late to prepare examples. I'm confirming that a Max 7 license will allow you to run Max 6 for the purposes of this class.*
- Decent headphones for use in the Media Lab
- Some type of removable storage media (cloud drive, thumb drive, portable hard disk, etc.) is required for backing up data if working in the lab or DAW rooms.

Course Description and Objectives:

This course will focus on using Max to create real-time processing and performance environments. Topics will include the basics of programming, programming in Max, creating interactive MIDI performance programs using Max, creating interactive audio processing programs using Max, and creating a live-performance audio program using Max.

The course will divide into three large sections. The first section will focus on basic programming in Max, culminating with students creating an interactive MIDI performance program and short creative project demonstrating their program. The second section will focus on audio synthesis and audio processing, and will end with students creating an interactive audio synthesis/processing program and short audio project. Students will create and perform a final audio project using an interactive live-performance program of their own design, using MIDI, digital audio, and digital video.

Course work will take the form of smaller assignments and the three larger projects described above. There can be some out-of class prep assignments that will involve readings and video lectures that prepare you for in-class assignments and/or demonstrate more involved patchers than I can cover in a single lecture.

Rationale

Learning to program interactive audio/video systems will aid you in numerous pursuits, including live performance, composition, human computer interface design, interactive software/gaming, and virtual environments.

Studio Policies

Your enrollment in this course serves as your agreement to abide by Music Technology Studio Policies. A copy of these policies is available online at <http://jeffreyseitz.com/pmwiki/pmwiki.php?n=Site.StudioPolicy>. A summary of the most important guidelines for this class includes:

- Only authorized users are allowed in the studios, and only to use authorized equipment. Do not bring your non-musicTech friends to hang out with you. Outside visitors require prior approval from faculty or staff. As students in MUMET 342, you are authorized to use the Media Lab and the DAW studios.
- No food or drinks may be consumed in the studios. You must keep all food and drink sealed and in a backpack or some other carrier while in the studios. You can bring in and drink water in the studios, but keep it sealed when not drinking from it, and keep it away from the computers and other electronic equipment.
- Do not move furniture from studio to studio.
- Keep the Media Lab neat and professional in appearance.

Email Policy:

Students are expected to monitor their BSU email accounts on a regular basis. Periodically, I will need to send important information to you via email. BSU email can be configured to forward to an outside account if you so desire, but I am not responsible for keeping track of your personal (non-BSU) email addresses.

Course Outline and Grading:

The course outline will be posted on the blog/web as the semester progresses. Example files will be available from iLocker or other ftp hosts.

Your final grade will be determined according to the following scale, subject to minor modifications if needed:

Small Assignments/Participation:	20%
First Two Large Projects (MIDI and Audio Processing):	45%
Final Project:	35%

Your grades will be kept online on Blackboard.

Attendance Policy:

Attendance at class, Sonic Arts Technology concerts and Sonic Arts Technology-sponsored special events is mandatory. You are allowed four (4) absences over the course of the semester (excused and unexcused count the same) without penalty. Five (5) absences and above will result in a failing class grade. Absences refer to both class meetings and Music Technology-sponsored events. You will be provided with information regarding Music Technology concerts and sponsored activities well ahead of these events. In the extraordinary event that you cannot arrange your work or other class schedule around these events, please notify me in advance in writing (email). There will be a sign-up sheet for attendance outside of music technology events.

In the event that you miss a class, it is your responsibility to do the required work and/or get the material covered from another student (and/or the web).

Special Needs:

Students needing special adaptations for the course, or who require special assistance in the event of an emergency evacuation should contact the instructor privately as soon as possible.

Course Outline (highly variable)

Week 1 Jan. 6, 8	*Topics*: Max and MIDI Basics – MIDI in/out – math – tables – random(ness) – metro (real time) – counter.
Week 2 Jan. 13, 15	*Topics*: Continued work with MIDI objects, math, tables and time – musical time – transport – mapping/scaling data – user interface controls – encapsulation.
Week 3 Jan. 20, 22	*Topics:* Pattern sequencing – coll – probability and decision making – Etch-a-Sketch madness. *Start Work on MIDI project*
Week 4 Jan. 27, 29	Continue work on MIDI project – topics as needed/desired *Finish and perform live MIDI project*
Week 5 Feb. 3, 5	*Topics*: Basic Audio – simple synthesis – mapping/scaling MIDI to synthesis – filters.
Week 6 Feb. 10, 12	*Topics:* Polyphony – tremolo and ring modulation – AM/FM synthesis – delay lines.
Week 7 Feb. 17, 19	*Topics:* Mapping MIDI to MSP – filters. *Start Work on Audio Synthesis project*
Week 8 Feb. 24, 26	*Topics*: Additional topics as needed/desired. *Finish and perform Audio Synthesis project*
Spring Break March 2 – 6	*Make good decisions :)*
Week 9 March 10, 12	*Topics*: Audio buffers – groove~ – record~ – waveform~
Week 10 March 17, 19	*Topics:* Different types of buffer~ playback – controlling buffer playback with MIDI and automation
Week 11 March 24, 26 (3/26 SEAMUS)	*Topics:* FFT-based processing
Week 12 March 31 – April 2	*Topics*: Continue FFT-based processing – developing a performance interface – begin Jitter (basic video concepts) *Start Work on Final Audio/Video Performance Project*
Week 13 April 7, 9	*Topics:* Continue Jitter and working on final project
Week 14 April 14, 16	*Topics:* Continue Jitter and working on final project
Week 15 April 21, 23	*Topics:* Continue Jitter and working on final project
Final Exam Day Tuesday, April 28 12:00 – 2:00 pm	*Final Audio/Video Performance Project* concert during final exam time.