

Multimedia Performance Systems ARTS 4963, ARTS 6964

Tuesdays, 12-3:50

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This class will explore composition and programming for real-time performance and interaction using primarily the MAX/MSP/jitter multi-media environment (<http://www.cycling74.com>). We will begin with the basics of MAX and MIDI, move to sound synthesis, digital signal processing and sample manipulation with MSP, and image/video manipulation with jitter. We will also touch upon other the “Processing” environment and other platforms raised in class discussions. Final projects will consist of a real-time performance system, DJ/VJ system, or interactive sound/video installation. Prerequisite is Computer Music Studio (ARTS2020), Grad. status or permission of the instructor. This course is a good introduction for interactive arts programming, advanced projects in computer music and performance/composition/improvisation seminars.

This course is based in your projects. You will propose a project at the beginning of the semester and demonstrate your steady progress towards that goal throughout the semester. Issues raised by the collection of projects in the class will be addressed through special sessions, reports and guest presentations. Projects may be collaborative, but each student will demonstrate their own individual involvement and initiative through class demonstrations and presentations. The main requirement of the course, besides the demonstration of consistent work, is a completed final project and its presentation in class or at another public venue.

This course is rooted in your independent research. While we will explore many topics together in the course, Many issues will arise relative to your projects that can only be solved through independent research. You will need to read books and manuals, search the web for similar projects and papers that address your issues, and talk to experts to solve your problems.

This course provides a “users group” environment for support of projects and research. An important part of the class will be involved in presenting and discussing our projects in class and sharing ideas and knowledge about specific issues relating to the work. Usually participants in the class have a very wide range of experience and a great deal of support and direction will come from class discussions.

MMPS is cross-listed for Grads and upper level Undergrads. A majority of the course materials and assignments will be similar, although the esthetic and technical expectations for performance in your projects will be different. Following are the basic requirements of both sections:

Graduate track (6000 level, 3 credit hours)

- 1) Detailed semester project proposal due Sept. 8th
- 2) Required attendance in class discussions and presentations first part of class.
- 4) Optional lab sections second part of class.
- 5) Presentation on performance systems from cycling 74 artists archive, NIME online archives or other materials.
- 6) several in-class working demos: present aspects of the patch you are working on with working demo code for distribution; control/logic, sound, visual, full patch operation and structure.
- 7) Individualized readings and research based on your project and private meetings.

Undergraduate track (4000 level, 4 credit hours):

- 1) "Dream System" presentation due Sept. 8th.
- 2) Weekly tutorial and reading assignments, and required attendance for labs.
- 3) Presentation on performance systems from cycling 74 artists archive, NIME online archives or other materials.
- 4) several in-class working demos: present aspects of the patch you are working on with working demo code for distribution; control/logic, sound, visual, full patch operation and structure.

Course Materials:

Strongly recommended:

Personal copy of MAX/MSP/jitter from cycling74

One-time 9-month Max/MSP/Jitter authorization - \$59 for students:

<http://www.cycling74.com/purchase/discounts>

Documentation and tutorials:

Max/MSP Complete Documentation (10.7 MB, updated 11 August 2006)

Jitter 1.6 Complete Documentation only (13.7 MB, updated 11 August 2006)

<http://www.cycling74.com/twiki/bin/view/ProductDocumentation>

Recommended Reading:

- Roger Dean, *Hyperimprovisation: Computer-Interactive Sound Improvisation* CMDAS 19 ISBN 0-89579-508-6 (2003) xxvi + 206 pp. and CD-ROM (cross platform)
- Winkler, Todd: *Composing Interactive Music: Techniques and Ideas Using Max*
- Robert Rowe: *Machine Musicianship*
- Perry Cook: *Real Sound Synthesis for Interactive Applications* (With CD-ROM)

Learning Outcomes:**Participants in the class will, at the completion of the course, be able to:**

- 1) *Implement* concepts of HCI, computer programming, media generation and artistic performance through exercises and their own independent projects.
- 2) Discuss and *demonstrate awareness* of artistic and technical work that relates closely to their own projects and the work of others in the class.
- 3) *Communicate* technical and artistic ideas effectively through richly illustrated class presentations and demonstrations.
- 3) *Imagine, propose, manage and implement* a complex independent research project providing tangible demonstrations of results at various points in their progress.
- 4) Depending on experience, *perform* either a fully developed demonstration of their work, or participate in a formal performance venue such as the final Graduate/Undergraduate Shows, an outside professional venue, or a MFA or PhD presentation.

Grading:

The class will be held in a seminar format. Classes will generally be divided between the presentation of new material and discussion of student work. Much of the technical material will be presented very quickly in class, and students are expected to work independently using the

equipment manuals in the studio, and outside assigned or independently researched reading, in order to reach the level of proficiency with the equipment and software demanded by the course. Most of the student's grade (40%) will be dependant on your ability to successfully complete and perform your final project, and to demonstrate consistent progress towards that goal throughout the semester through class presentations of proposals, works in progress and hardware/software development demonstrations. The remaining considerations in grading are attendance (20%), class participation, and assigned presentations (40%).

Because of the wide range of student experience, a formal agreement may be made between the instructor and certain students in order to pursue an independent track towards completion of a final project. This will be investigated especially in cases of advanced graduate students who are pursuing a project as a major aspect of their dissertation or thesis work. Part of the agreement will involve periodic special presentations to the class at large about their progress and findings, and participation in general class presentations and critiques in order to share their knowledge and experience with the other students.

Mid-Term Evaluation

Since this course is very independently based, mid-term assessment of student standing in the course will be provided to the students after the week of the second work presentation on Oct. 20th. I will work with students having difficulties toward improving their standing.

Cross Listing – 4000/6000 level

This class is cross-listed for Grads (6000 level) and upper-level Undergrads (4000 level). The Undergrad section is 4 credit hours, the grad section is 3 credit hours per departmental scheduling policies. One cannot receive credit for both the 4000 and 6000 level course sections. While the basic written requirements and seminar format is the similar to both sections, Grads are expected to perform at a higher esthetic and technical level, and to create work of the quality necessary to be included in Departmental MFA shows and crits, ultimately contributing to thesis investigation and artwork. They will also be called upon to give formal demonstrations of their work and to present information on technical topics, the work of others. They may be called upon to assist students at lower levels during class lab sessions.

Because of the wide range of technical and artistic levels in the class all students are expected to perform to the best of their abilities and to clearly communicate the topic and scope of their projects for independent guidance, and the articulation of course expectations relative to their level and program.

This course is eligible to serve as part of your EMAC thesis.

The “thesis experience” consists of eight 4000-level credits within the concentration, culminating in a public presentation and documentation of the work produced. The eight credits may be selected from a list of eligible courses and internships within each concentration. Students may select two courses *or* one course and an internship.

In the event that you have chosen to take this course for thesis credit, you must inform the instructor of the course of your intentions and complete paperwork declaring your thesis plans and rationale.

If this is your first thesis course, you must complete Part One of the EMAC Thesis Requirement Form stating your intentions regarding the second course when you register for that course. Submit Part One of the form to Erin Glasheen.

If this is your second thesis course, you must complete Part Two of the EMAC Thesis Requirement Form describing the public presentation of your thesis. Submit Part Two of the form to Erin Glasheen and the instructor for the second thesis course or internship by the date specified on the form. Upon completion of the presentation, you must submit documentation of the presentation and a copy of this form to the instructor for his/her signature.

If you do not complete the presentation and documentation, you will receive an “Incomplete” in the course.

Electronic Mail

All students will be expected to check their electronic mail accounts for correspondence concerning this course. Email provides an excellent forum for sharing technical information, as well as for posting changes in assignments, readings, and listenings.

Make sure I have your preferred email address.

Web Site

Related materials will be posted on a (developing) web site as the course progresses:
www.arts.rpi.edu/crb/classes/MMPS

Regarding Academic Integrity

Collaboration between students in this course is strongly encouraged. Likewise, students are encouraged-indeed, to some extent required-to exchange ideas, opinions, and information constantly. You are encouraged to help each other with performance, production, and presentation of composition projects.

Plagiarism of any kind is in direct violation of University policy on Academic Dishonesty as defined in the Rensselaer Handbook, and penalties for plagiarism can be severe. In this class you will be expected to attribute due credit to the originator of any ideas, words, sounds, or work which you incorporate substantially into your own work. This applies particularly to citation of sources for quotes and ideas included in your compositions.

Work found to be in violation of the Academic Integrity policies of the Institute will result in a failure for the course, and you may be subject to additional disciplinary action by the Department, School or Institute.

Schedule

Schedule is subject to change according to class level and number of advanced track vs. basic track students.

Student presentations: Each week we will have one or two student presentations of influential artists or personal work.

Control and Logic - MAX

1. Sept. 1
Orientation: structure of Max, basic operation.
Discussion: what is interactivity ?
Lab: Max tutorials: 1-12
2. Sept. 8

- Dream Systems Presentations:** present in class a short proposal sketch for your “Dream System,” or a detailed description of your current project (Grads, Culminating and Advanced students). Support presentation with sounds, sketches, video, images etc.
Lab: Max tutorials: 13-23
3. Sept. 15
Structural Diagrams discussion in class: Make a modular diagram of the major aspects of your final project patch. Then try to break down major functions into sub-functions (and sub-functions into sub-sub-functions...). Basic students in "pseudo code" and images, advanced students in real code.
Lab: Max tutorials: 24-31
 4. Sept. 22
Student presentation: mockup of initial work on projects and establishments of personal deadlines.
Lab: Max Tutorials: 32-43

Sound Synthesis and MSP

5. Sept. 29
Lab: MSP Tutorials: intro-13
6. Oct. 6
Lab: MSP tutorials: 14-26
7. Oct. 13 monday – no class
8. Oct. 17
Lab: MSP tutorials: 27-31
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9. Oct 20th **Student presentations of work on projects and progress towards personal deadlines.**

Visual Performance and Jitter

9. Oct. 27
Lab: Jitter tutorials: intro-9
10. Nov. 3
Lab: Jitter tutorials: 10-20
11. Nov. 10
Lab: Jitter tutorials: 21-26,
12. Nov. 17
Student presentations of working mockups of projects and progress towards personal deadlines.
Lab: jitter recipes
14. Nov. 24 NO CLASS - Thanksgiving

Putting it together - final presentations and performances

15. Dec.1,
Final Presentations in class – Grads full working demo prior to crit presentations.
16. Dec. 8,
Final Presentations in class – Undergrad completed projects.
ALL CLASSWORK DUE