Art 316: Interactive and Multimedia Art

Meeting times: Mondays and Wednesdays, 12:30 – 3:00, KSE 516
Instructor: Jessica Fenlon
Email: fenlon@uwm.edu
Office Hours: by appointment - KSE 516

Credit Hours: 3 credits
Class Meetings: ~5 hours per week (~ 75 hours total)
Independent work outside of class: ~ 6+ hours per week (90+ hours total)

Information for students
Please familiarize yourself with the following university policies. At the request of the Faculty Senate, the Academic Policy Committee prepared a summary of recommended items for each course syllabus. This summary is available in printed form from your department chair and at: http://www4.uwm.edu/secu/news_events/upload/1895R3-Uniform-Syllabus-Policy.pdf. See also http://www4.uwm.edu/secu/news_events/upload/Syllabus-Links.pdf. Student academic misconduct procedures are outlined here.

Catalog Description
In this intensive production class, students will produce art objects and installations that ask us to interact with cameras and structured light (Kinects) for body- and motion-tracking, and/or Arduino sensors for motion or other tracking, and/or microphones for amplitude tracking, and/or MIDI and USB devices to control digital elements.

Course Description and Goals
This class will focus on interactive technologies and aesthetics in contemporary art. Students will learn basic software development and real-time computational methods. They will make video projects while learning basic software development: simple MIDI sounds or drawings, moving up through digital audio triggered with human interface devices (USB, MIDI, Bluetooth), and work with recorded and live video files for live mixing and computer vision (body- and motion-tracking, for example). Assignments will include small projects with varying technical goalposts, as well as a mid-term and final project that will be focused on conceptual-material aesthetic themes.

Class time will include demonstrations, in-class work/technical activities, discussion of the built world and the artist's role therein, work days, and critique. Although students will produce parts of their projects during class (at least 30 minutes each day), most project manufacture will be done outside of class time.
During weeks when larger assignments aren’t due, students will turn in small projects — ‘sketches’ — as shown in the class calendar.

Occasional readings and/or screenings will be provided in class, on D2L / e-reserve, and via web links. Students will be notified when this occurs and are expected to follow up on their own time.

There may be visiting artists in class, and/or outings to view contemporary installations or see artist talks. In these instances, the class may be moved to a different room and/or end early to attend such outside events.

**Student Learning Objectives/Outcomes:**

Students will learn:

- the history of the development of computing and its cultural impact
- foundation of software development and the workflows that support successful outcomes
- computational logic for executing generative ideas using math, randomization, probability, and data transformation
- to successfully route signal for real-time audio, video, and computer vision in maxMSP+Jitter projects
- troubleshooting and problem solving when things don’t work
- audiovisual triggering and variable real-time responses
- project management and research skills, by keeping a process book
- how to plan and prepare for the mechanics of installation
- human interface strategies: from choosing the right controllers (MIDI, guitar hero, Wii) to programming buttons, dials, sliders or other on-screen interface elements
- aesthetic criteria for interactive art objects and installations
- critical perspectives for discussing interactive, performative, generative art, and the artist’s role in the built world

**Required Books/Readings**

Required readings will be provided in D2L, announced in class and in the schedule.

**Required Materials/Supplies**

- laptop running Max/MSP+Jitter 7 (educational discount is $10/month, $59/year, or $250 full license at [https://auth.cycling74.com/purchase#educational](https://auth.cycling74.com/purchase#educational)) and web access to post and review patches. This is required. Having no computer, or lacking the software, will not be an acceptable excuse for work not done.
- sketchbook or notebook
- construction supplies as needed
other materials as needed for each student’s specific projects. These may include specialty lights or microphones, USB or MIDI devices, cameras or kinects, other pay-for-play software. Some of this will be made available on loan through the department.

**Recommended Materials/Supplies**
- Microsoft Kinect 1414 or a USB plug-in camera with manual setting options. **Built-in iSights (and built-in cameras generally) are not suitable for most interactive purposes (this will be explained in class)**.
- Headphones

**Lab policy**
All students must have machines running Max/MSP+Jitter. All computers in KSE 516 also run Max.

**KSE 516** lab hours will be run by classes offered in that room, and Decode members. Lockers will be assigned/chosen by students in the first few weeks of class. You will have access to the classroom when classes are not in session. Access to the back room (516a) is only for those students certified to use the equipment in that room.

**Participation, Absences, & Other Class Policies**

**Attendance:** Attendance is mandatory. You will be allowed 3 absences for any reason; each additional absence will lower your grade by a full letter. Excessive (i.e. more than 3 absences or two weeks of class or more) **for any reason** will require that you contact the chair’s office regarding your situation in order to remain enrolled in the course.

*Students who demonstrate a lack of motivation in attendance, professionalism, and/or in completing their work on a timely basis will be asked to drop the class.*

**Tardiness:** Students must be present and ready to work when class begins. Plan to arrive with enough lead time to set up your computer and anything else you may need to fully participate. **3 lates = 1 absence.** If you are late you are responsible for alerting/reminding me after class, so that I can update my attendance sheet; otherwise you may be marked as absent and it will affect your grade further.

**Deadlines and Critiques:** Each project’s due date will be announced when that project is assigned. Class critiques start on the due date. Projects not available for critique will be considered late. Late projects will be downgraded one full letter grade for each **class** day it is late. **An “F”** is given after two weeks. If you will be absent on a due date, you must turn in your assignment that day, via a classmate or the course web site.
No cell phones allowed in class. Phones ringing and pinging disrupt the class. Class time is for work on current projects, exercises, discussions, and more. Students are not to work on outside projects in class. Use class time wisely and efficiently.

Be prepared appropriately for class. Bring all “process” work and necessary supplies to class. Expect to feel unsure most of the time; this is a sign that you are making progress, taking risks, discovering. Move forward in your process even when you feel unsure.

Missing Projects: No student will pass this course unless all projects are turned in. To clarify: All project assignments must be turned in to pass this class.

Re-submitting Projects: Students who have submitted passing projects on time may choose to re-work and re-submit them before the end of the second to last week of classes, based on feedback from me and the class. The project will be re-graded; the new grade will be averaged with the old. Late or failed projects are not eligible for this option.

Overflow Topics: A list of 3 to 5 overflow topics that are too ‘big’ to include in this semester’s class will be made available to the class during week three, so that students have time to consider including an overflow in their midterm project. If you choose to include an overflow topic in an assignment, you will get at minimum 5% extra credit, and at maximum 12% extra credit for that project grade. Successful deployment of the overflow topic will depend on how it relates to the content driving your work; sticking it in there to get the grade won’t help you. Overflow topics may include content like particle animation, including JSON data in a dict object, or inclusion of other digital software to the patch via syphon server.

Class Cancellation: Classes are sometimes canceled due to weather conditions or emergencies. This information will be on the university web site, and/or in your email inbox. I will contact you via email regarding changes to the syllabus, including due dates for assignments, should this occur.

Descriptions of assignments & how they are assessed
Each patch should open in Presentation mode, with directions provided to “turn it on”. You will be submitting work in every week of this class, at least until the final project proposal in April after spring break.

Sketch Patches
These assignments are created for you to solve very specific signal flow or ‘logic/control’ problems. These problems are key tech tools that you will need to deploy in the assignment that immediately follows it. These tasks allow you to separate ‘technical problem-solving’ from the more ‘creative thinking’ you’ll be using when you design your
Bot projects, midterm and final. They are assessed as “completed” or “not completed” and counted in the “Ongoing exercises” category of your final grade.

**Project Assignments: 3 Bots, Midterm and Final Projects**

Each assignment and project is presented in class and receives a written evaluation and a letter grade. They are graded on the following nodes:

- Does the project align with your description?
- How well does the project align with your intent?
- Does the interactive or generative technique work?
- Has your work, in the context of the series of projects built over the semester, shown technical and conceptual growth through self-challenge?
- Assessment of conceptual-material frameworks
- Aesthetic interest.

You will receive feedback comments both during the critique and afterwards. Keep notes of both faculty and peer insights. Late assignments get a full mark-down of a letter grade for every class they are late, and absences do not excuse lateness – assignments are turned in online. Extensions can be granted, but only if negotiated with the instructor in advance of the due date.

**The Process Book**

Your process book will be turned in for assessment at your midterm and final projects. Document and retain every aspect of your thinking, decision-making, learning, and creative process in MaxMSP. I expect to see notation on a class-to-class basis, as well as the questions arising from the process of learning.

MaxMSP is an enormous environment to learn to work inside of. There are zones of use that we are not going to engage at all; we will still have too much to learn! When beginning, you cannot expect to learn and retain it all on the fly. Your process book is a place to write down how to use elements of the software that you do not yet understand, remember details that don’t make sense right now (but will later), and help you plan your builds as projects become more complex.

Your process book will be 20% of your midterm and final project’s grade.

**Bot 1: R2-generator**

A patch with a unified look and feel that generates software-based sound. We refer to R2-D2 here as that StarWars droid has a characteristic look and sound.

- Sound: Use MIDI and/or oscillators and/or other digital signal processing
- Control: use any combination of buttons, toggles, metronomes, randomizers, counters, and/or other learned objects.
- Bling: Give it a look! Make it blink and shine.

**Bot 2: Pollack-bot**
A small, generative drawing project.
- Jitter: jit.lcd or jit.gl.sketch.
- Control: math, decision trees, gates, switches
- Sound: will you include it? How and why?
- Interaction? Clear? Hmm, keyboard or mouse or automation - ?

**Bot 3: Music Visualizer OR Visual Score**
A generative &/or interactive project that either analyzes sound signal to trigger image, or analyzes visual data to trigger / manage / produce sound.
- Use both video (live &/or pre-recorded) and digital audio (live &/or pre-recorded)
- Sound must trigger visuals OR visuals must generate audio
- Include pre-made patchers from the Vizzie &/or BEAP libraries.

**Mid-term Project: Neuron**
An interactive art work that breaks out of the computer, with the following features:
- external input (Human Interface, Computer Vision, Arduino, etc).
- pre-recorded video &/or live &/or pre-recorded sound
- user interface components for user to control &/or interact
- output to projector &/or speaker into other created environment as needed
- unifying concept or story
- brief artist statement about their work (less than 300 words).

Technical skill and engineered artistry will be judged against the student’s text-based framing of concept, creativity and interactive and visual aesthetics.

**Final Project:**
A large-scale interactive and/or generative and/or networked installation, performance, tool or art object. Students will be graded against their artist statements, technical abilities, conceptual frames, project management, creativity, and interactive and visual aesthetics. Undergraduates will show complete and working software, budget, and sketches for the full installation. Graduate students must set up the full installation somewhere in Kenilworth as part of their final critique.

Final projects are assessed as much for presentation skills and workflow management as for the content of the work and its technical execution. They must be formally proposed before they are made, and will include proposals, artist statements, and other details that will be made clear in the in-class presentation of the assignment.

Each assignment and bot is graded on the following nodes:
- Does the project align with your description? How well?
- Does the interactive or generative technique work?
- Has your work, in the context of the series of projects built over the semester, shown technical and conceptual growth through self-challenge?
- Assessment of conceptual-material frameworks
- Aesthetic interest

All students are required to fully demo / install their work during our final week of classes.

Built World Discussions

“When you grow up you tend to get told the world is the way it is and you’re life is just to live your life inside the world. . . Life can be much broader once you discover one simple fact: Everything around you that you call life was made up by people that were no smarter than you and you can change it, you can influence it, you can build your own things that other people can use.” ~ Steve Jobs

Evaluation + Grading

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<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
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<tbody>
<tr>
<td>15%</td>
<td>In-class participation</td>
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<tr>
<td>20%</td>
<td>Ongoing exercises, patch sketches, &amp; assignments</td>
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<tr>
<td>5%</td>
<td>Reading responses</td>
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<tr>
<td>7%</td>
<td>R2-generator</td>
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<tr>
<td>7%</td>
<td>Pollack-bot</td>
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<tr>
<td>7%</td>
<td>Visualizer</td>
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<tr>
<td>14%</td>
<td>Neuron [ midterm ]</td>
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<td>25%</td>
<td>Final Project</td>
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Final grades will be based on the summed percentages of the project and exercise grades, and will include evaluation of attendance, participation in critiques and discussions, intensity of work ethic, and growth as an artist/designer throughout the semester.

Academic Misconduct

No artist writes code in a vacuum; online repositories allow users to develop other artist-coders’ work. There exists a growing body of publicly shared creative code and Max patching techniques published in repositories, blogs, and tutorials. The complexity of the
labor that drives creating in this environment demands drawing down from this living library of shared code; additionally, we must make our own contributions to that library.

We are working in an academic context. This context demands measurable growth in skills, computational thinking, and conceptual development through original assembly of finished work. Additionally, ethical concerns related to intellectual property will be addressed in how we credit our sources.

**Starting with assignment 3 (Visualizer) using content or control logic from published patches will be allowed in the bot assignments, midterm, and final projects.** Adopted elements – bits and pieces of other patches that solve content delivery problems – must be fully credited to source patch via link (if source is not a class member), or naming the classmate’s source patch.

Save the source materials you to assemble into your assignment. You must post the source patch to D2L with a description of your process of figuring out how to isolate the useful pieces and adapt it into your own work. Failure to post the source will negatively impact your grade for that assignment up to two letter grades.

**Sketch-patches assigned to teach you how to create control logic must be entirely original.**

Student academic misconduct procedures are outlined [here](#).

**Course Schedule**

You will be turning something in every Tuesday for at least the first 9 weeks of the course. Many of the ‘sketch patches’ can be completed in class on Monday if you choose to stay focused and on task in class. Class meetings in which assignments are being given include the word *Homework*.

**Week 1: Getting Started**

**W 1.23: Hello World**

Hello! Icebreakers, syllabus, welcome!

Introduction to Max MSP

**Week 2: Clocks, Timing, Generative Elements**

**M 1.28:** Patch : objects & patchcords to create a Counter; accessing ‘help’ and reference.

Presentation: R2 Generators assignment [due 2.4.2018]
Homework: finish counter sketch & upload to D2L 1.29.

W 1.30:
Patch: Discuss Counter, learn from each other’s work, and more.
Small group work: R2 generator.
Homework: Finish R2 and upload to D2L before 2.4 class.

Week 3:

M 2.4: R2 Critique
Each student presents their R2 generator
Homework: Reading provided in D2L, with 1-page (600-word minimum) response uploaded to D2L for 2.6 Built World discussion.

W 2.6:
Chalk Talk: Overflow topics
Built World Discussion: Generative Art
Patch demonstrations TBA

Week 4:

M 2.11: Patch: jit.lcd
Chalk Talk: Software Development – encapsulation, UI, and optimization
Assign Homework: Bot 2 ~ Pollack [ due 2.18 ]
Homework: successfully executed “write to jit.lcd” patch due 2.12

W 2.13:
Small group work: Pollockbot
Patch demonstrations TBA

Week 5:

M 2.18: Pollackbot Critique
Object syntax: arguments
Homework: Reading (see D2L). 1-page (600-word minimum) response uploaded to D2L for 2.6 Built World discussion.

W 2.20: Body Tracking Demo
Built world discussion - Action, Reaction, Phenomenon
Week 6:

**M 2.25:**
- Patch: SIGNAL – intro to MSP, various osc’s
- Control patch demos for playlist objects
- BEAP intro; BEAP/filter jam & lessons

**Homework**: 3 kinds of Synthesizers patch sketch due 2.26

**W 2.27:**
- Patch demo TBA
- Small group work on Visualizer.
- Programming in Max: Making Abstractions

Week 7:

**M 3.4**: Visualizer Critique

**Homework**: Built World - Sebastian Schmeig’s [Search By Image](#) project & interviews ~ Politics of Image Search [Part 1 & Part 2](#)

**W 3.6**
- Built World: Schmeig’s project & the built nature of image search
- Patch demonstrations TBA

Week 8: HELLL000000000000000000000000000000000 ~ Mr. Jackpots

**M 3.11**
- Presentation: Neuron assignment ~ the midterm project due 3.31.
- Brainstorm, discuss, patch, look at other people’s art, talk about what’s important to us, spitball ideas, what signals should connect or combine in the project?

**Homework**: sketch with projector deploying work into physical space due 3.12

**W 3.13**
- Share projection strategies and possibilities, discuss
- Built World accessibility activity: blindfold

**Homework**: Prep 5 minute presentation on an artwork and strategy that may inform your midterm project. Bring 3 ideas for midterm project to 3.25 class; put links to artists & projects on D2L on 3.24.
Spring Break: Study the technology of video

- watch Lillian Schwartz's pioneering computer animations
- Justin Lincoln's Blogmix project, some made with Max/MSP
- Read Video Art: From Monitor Sculpture to Video Sculpture
- Apple Pro-Res White Paper

There’s a lot here; the more you understand how codec, image, and pixels work, the easier it will be to understand how your patch uses video – and translate the idea of what you want to do into the technique that you can do with Max.

Week 9: Video - Codec, Capture, Synthesize, Animate

M 3.25
Each student presents artwork that may inform the midterm project.
More discussion / spitballing Neuron.
Patching: Jitter
Chalk Talk: How to write an artist statement.

Homework: patch sketch(s) of Video as captured, synthesized, as linked file, or as still frame animation, or a pair of composited videos - due 3.26.

W 3.27
Patch demo(s) : video tutorials
Demo: Compositing, as it relates to OS’s graphics tech/digital language
Demo: Syphon / 3d party integration / packages
Small workgroups: work on Neuron

Week 10: Present-Discuss Neuron [ Midterm project due 3.31 ]

M 4.1: Each student presents Neuron project.
W 4.3: Each student presents Neuron project.

Week 11: Pseudocode & Workflow

M 4.8:
Homework: Read Built World articles [ in D2L ]

W 4.10: Pseudocode
Build World discussion
Week 12: Workweek

M 4.15: Synesthesia
Patch: Synesthesia – Data translation in the Matrix as a core aspect of digital media artwork
Homework due 4.17: Upload project proposal for final project to D2L

W 4.17
Patch: New concepts or review on an as-needed basis.
Homework: Read Built World articles [ links will be in D2L ]

Week 13: Text

M 4.22: Built world discussion.
W 4.24:

Week 14:

M 4.29:
W 5.1:

Week 15: Final project Critique Week

M 5.6:
W 5.8:

Final Course Meeting Thursday May 16 12:30-2:30 PM