NMD 295-001: Design Patterns for New Media (Spring 2008)

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Course Description
This is a hands-on course intended to reveal the development patterns underlying a wide variety of new media project archetypes. It demonstrates how artists and coders can move from high-level conceptual thinking to the specific details of project implementation. Each archetype will be covered in two ways: a look at a prototypical project that will give you a general background in an area and specific examples from previous or current capstone projects in the genre. The emphasis for this class is on design methods more than it is on final results, so you should plan the time you devote to different aspects of the course and its assignments accordingly.

Course Goals
1. Determine a methodological structure for the production of different new media project archetypes that you can use as a basis for future work.
2. Learn how to effectively research unfamiliar technical implementation techniques so you can use your ideas to shape your work rather than your technical limitations.
3. Gain a greater understanding of how individual technologies interact to create overall functionality within hardware or software.
4. Develop specific implementation skills in the areas of project design and programming.

Required Equipment
You will need to purchase a video synthesizer kit during the first week of the semester. You will also need tools and parts for working with this kit, including a soldering iron, solder, wire, and possibly other miscellaneous electronics components. The kits will be available for purchase from Velma. Also be sure to bring your laptop to each class session.

Pilot Course Disclaimer
This is a newly-created course and you should probably expect a bit of a bumpy ride at first. After the first month of the course I will ask for feedback on what is working, what isn’t, and what you’d like to see in the future. Since there may be some adjustments during the semester this syllabus is only a guideline for what is planned and is subject to change.

Required reading throughout the semester
BoingBoing, Engadget, We-Make-Money-Not-Art

Course Flow
The course is broken up into five two-week units and a month-long final project. Each two-week unit will have roughly the same format:

Class 1: The unit will be introduced, the prototypical example discussed and assignment given.
Class 2: Capstone examples will be discussed and a problem will be selected for research.
Class 3: Capstone research results will be discussed and there will be a lab for the assignment.
Class 4: Prototypical assignments will be presented and critiqued.
“How it works” assignments
Every two weeks you will have to pick one piece of hardware or software featured in the required reading blogs and submit a plausible explanation of how it works. This explanation does not have to be deep enough to cover the actual programming involved, but should explain how different functional units interact: input sends data to processing, processing analyzes it like this then sends it to a database, further input requires querying the database, etc. The explanation can be textual or in an image or flow diagram; if it is text, less than one page is expected.

Capstone participation
One or more capstone student(s) will give a presentation to the class for each unit (except during the final project). This presentation will give an overview of their capstone and discuss a technical problem or challenge they are having with implementing their project which is relevant to the topic under discussion in the class. You will have until the next class to research the problem presented to you, then there will be a discussion on how to go about solving the problem. The level of detail required for your solutions will depend on the scope of the problem you are given; conceptual problems may only require diagrams or pseudocode, while specific programming questions should be solved with sample code.

Attendance Policy
Attendance is critical because this class is centered on discussion and methodology, not just end results. You will be allowed to miss up to two classes due to illness or emergency, provided you notify me by email before class time. Each additional absence, or any unexcused absence, will result in the loss of a full letter grade. During inclement weather you should check the course folder on FirstClass for possible cancellations and check to see if the entire University has been closed for the evening. If you are absent during a critique you must present your assignment to the class at the next available opportunity.

Collaboration Policy
Unlike many new media courses, for assignments in this class you are not allowed to collaborate with your classmates or other new media majors. However, you are encouraged to use outside resources, including students you know from other majors, as research sources. All such sources must be referenced in the deliverable for the assignment you discuss with them.

University Policies
Disabilities: If you have a disability which will make it difficult to meet the expectations of the course, please contact either me or Ann Smith, Director of Disability Support Services (581-2319), as soon as possible.

Academic Integrity: Academic honesty is very important. Copying and plagiarism are unacceptable, including use of unmodified or unreferenced code beyond that which is specifically allowed in each assignment. As described in the undergraduate handbook, violations of the University’s academic honesty policy can result in consequences ranging from failure on the assignment to failure of the course and referral to the University for disciplinary action.

Participation
Once again, this course is focused on process and methodology. If the only time you talk is when you’re giving a presentation on your final result then you will have little opportunity to display your understanding of the processes being discussed and I will not have much information to use when evaluating your success in the class. Ask questions, throw in comments, and generally add to the
discussion as much as possible, particularly if you think you missed something or you have a stupid question. Odds are I just didn’t explain it completely and other people are as confused as you are.

Grading
Each assignment grade is weighted into your final course grade as follows:

- Capstone research: 30% (6 points per)
- Prototypical assignments: 40% (8 points per)
- “How it works” assignments: 10% (2 points per)
- Final project: 20% (20 points)

Please note that, with the exception of “How it works,” class participation is part of your grade for each of the assignments. An outstanding assignment can still receive a low grade if you don’t talk about it!

Topics
Hardhacks
Simple electronics techniques are demonstrated, then you are required to research how they can be used and experiment with them to produce an interesting result.
Assignment: Assemble a simple pre-programmed video synthesizer kit and then modify it to adjust the output. Reprogramming the synth is not required, but adjusting its inputs or outputs is.

Community Design
Shows patterns for developing a community-based project. This section focuses on functional units that are required to build login, tracking, and messaging systems.
Two-week assignment: Pseudocode samples for a basic messaging system, including database calls and language-independent output.

Non-Linear Narrative
Explains the development process for non-linear narrative, including planning, decision trees, and tool options. The patterns demonstrated in the section should apply to text, hypertext, video, and other interactive narratives.
Two-week assignment: Plan and implement a recursive hypertext narrative.

Aesthetic Transformation
Covers the development process for creating new meaning from old media through transformation and reuse. The emphasis for this section is on finding ways to not just transform an artifact but to do so in such a way that the new meaning is both powerful and apparent to viewers. Part of the evaluation for this project will be based on clearly charting the influences on and decision-making process for your transformation and demonstrating how those choices are reflected in their end result.
Two-week assignment: Leveraging the old context of a cultural artifact, transform it so as to impart a new meaning. Images, video, text, or sound are all candidates so long as anybody who knows the background of the original artifact should be able to understand the new meaning of the piece. The transformation can take place in either the same or a different medium than the original artifact.
Sensor Systems
Covers the design patterns for sensor-based projects and installations using Max/MSP. While the possibility of extending Max is encouraged, only built-in or readily attainable patches are used for this unit.
Two-week assignment: Create a functional-level design for a sensor/feedback installation. Any sensor connections used must have an accompanying (plausible) data acquisition model, but actual code for the sensor is not required.

Final Project
This class’s final project is to create a new programming language. The first part of this project is to understand what the functional components of a programming language are: variables, grammar, operators, etc. You must then invent a new language that uses all of these components. For the second part of the project you must write a compiler that translates code written in your new language into code for an existing language. This compiler will be tested by writing a simple ‘hello world’-style program in the new language and running the code output by the compiler. The new language does not have to be lexically complete and may be in any programming style you decide to use, but it must be functional enough to complete the ‘hello world’ program and it must offer at least one clear advantage that would encourage programmers to use it instead of just its target language.

Alternative Final Project
If desired you may choose to extend one of the earlier assignments as your final project. This must be a non-trivial extension, however--acceptable examples might be reprogramming the AVR chip on the video synthesizer or extending a recursive narrative into a full community authorship site. If you wish to do an alternative final project you must submit a proposal that clearly demonstrates how your project greatly extends the work you have already done and what goals should be used to evaluate your project upon presentation.

Timeline
Week 1 – Hardhacks
Jan 14  Introduction, Video Synth assignment given
Jan 16  Research skills discussion

Week 2 – Hardhacks
Jan 23  Video Synth lab, Capstone problem

Week 3 – Hardhacks
Jan 28  Capstone solution, Video Synth workshop
Jan 30  Video Synth Critique

Week 4 – Community Design
Feb 4  Message Board assignment given; first “How it works” due
Feb 6  Capstone problem

Week 5 – Community Design
Feb 11  Capstone solution, Message Board workshop
Feb 13  Message Board critique
Week 6 – Non-Linear Narrative
Feb 18 Recursive Narrative assignment given; second “How it works” due
Feb 20 Capstone problem

Week 7 – Non-Linear Narrative
Feb 25 Capstone solution, Recursive Narrative workshop
Feb 27 Non-Linear Narrative Critique

* Spring Break *

Week 8 – Aesthetic Transformation
Mar 17 Transformation Assignment given; third “How it works” due
Mar 19 Capstone problem

Week 9 – Aesthetic Transformation
Mar 24 Capstone solution, Transformation workshop
Mar 26 Transformation Critique

Week 10 – Sensor Systems
Mar 31 Max Assignment given; fourth “How it works” due
Apr 2 Capstone problem

Week 11 – Sensor Systems
Apr 7 Capstone solution, Max Progress report
Apr 9 Max Critique

Week 12 – Final Project (LOLCode)
Apr 14 Functional components of a language; fifth “How it works” due
Apr 16 var, int, float, char, str...

Week 13 – Final Project (Lexical Structures)
Apr 21 Conditional logic syntax
Apr 23 How I learned to stop worrying and love the RegEx

Week 14 – Final Project (Hello World)
Apr 28 Workshop
Apr 30 Hello World critique