

Schedule for “making furniture interactive”

Fall 2007

Week	Date	Topic
1	August 28 and August 30	getting started Aug 28: what is furniture, what is interactivity? how do we make things? looking at examples and references (video, web pages, pictures) class expectations and schedule Aug 30 here’s your Arduino, make it work (USB drivers, Arduino IDE, pins, code) run the example programs: blink an LED, fade an LED modify the example programs 90 second introduction to the class blog homework due Sep 4: make a lamp-thing from 3 colors of LED. homework due Sep 6: find, blog, & present examples of interactive furniture
2	Sep 4 and Sep 6	electronics Sep 4: electricity: power and ground, pullup resistors, very basic circuits switches, potentiometers, photocells digital input and analog input: what’s the difference? digital output and analog output wires, breadboards & soldering Sep 6: in-class brainstorming - what is the design space of interactive furniture? (Garth, Jet, Mark) homework due Sep 11: make your lamp-thing respond to (light) potentiometers, switches invent a switch
3	Sep 11 and Sep 13	programming I Sep 11 first lecture on programming - building a simple application in class. Sep 13 Mark away homework: due Sep 20: simple programming exercise homework: due Sep 27: the counter encounter counter problem: how many people come up to the counter?
4	Sep 18 and Sep 20	programming II Sep 18 a day on debugging (in-class demonstration of bugs and debugging) serial i/o for debugging (watch your program in the serial monitor window) Sep 20 * wild card day to use as needed *
5	Sep 25 and Sep 27	programming III Sep 25 in class help on programming the counter-encounter problem Sep 27 lecture on row-column scanning - programming the telepresence tables homework due Oct 2: write a program that runs on the teletables
6	Oct 2 & Oct 4	mechanics I - making things move Oct 2 survey of means for mechanical motion - homework due Oct 9: build a mechanism with two distinct motions homework due Oct 16: add power: build a kinetic sculpture driven by a motor Oct 4 servomotors, DC motors, and mechanics driving little DC motors mounting motors and attaching things to motor shafts pulleys, wheels, gears, screws, mechanisms reference: Arthur Ganson’s Machines, Jean Tinguely’s Kinetic Sculpture
7	Oct 9 & 11	mechanics II Oct 9 salvage session - deconstructing for useful parts

- Oct 11
- 8 **Oct 16 & 18 sensors of the world**
break-beam switches, presence IR, rangefinding IR, capacitive touch, thermistors, etc.
Oct 16 general introduction to sensors: kinds of sensors, reading sensor values, scaling values
Oct 18 Mark away
 lecture / demonstration: how to shop for electronics at digikey, etc.
homework: due Oct 30 prepare a project idea proposal for class presentation
- 9 **Oct 23 & Oct 25 bigger, more**
Oct 23 power when the Arduino onboard is not enough:
 relays and transistors to switch external power
 turn on a bank of LEDs (motors, etc.)
 drive a big motor
Oct 25
- 10 **Oct 30 & Nov 1 plan your project**
Dream, Design, Develop, Debug, and Document an interactive furniture piece
Oct 30 present your project ideas for discussion

Nov 1.
- 11 **Nov 6 & Nov 8 one month to build your project**
Nov 6
- 12 Nov 13 & 15
Nov 13 pin-up
- 13 Nov 20 a day on documenting - making decent pictures, video; writing decent paragraphs up
<no class Thanksgiving>
- 14 Nov 27 & Nov 29
- 15 Dec 4 & Dec 6 **last class** (coincident with Final Reviews in School of Architecture)

week of Dec 9 (to be scheduled) : public exhibition of interactive furniture

November:

in-class lectures on:

how to make a vision video (Zimmerman)

Field trip (with truck) to construction-junction, salvation army, and/or good will

Guests:

Garth Zeglin - guest critic and preceptor

Jason Campbell (robot chairs)

? Camille Utterback (CMU Children's museum artist) ?

John Zimmerman (make a vision video ...)

Golan Levin

(Adam Greenfield?)

Read: Coming Age of Calm Technology, Mark Weiser

The Chair - Galen Cranz

Everyware, Adam Greenfield

Shaping Things - Bruce Sterling

When Things Start to Think, Neil Gershenfeld

(reading from)Diamond Age _ Neal Stephenson

Blog:

personal blog includes responses to readings,
descriptions, photos and videos of work

Inspiring References: (These go on the class blog)

Danny Rozin's Wooden Mirror

Usman Haque

Eileen Gray and other furniture designers of the 20th century

Technical References:

Tom Igoe and Dan O'Sullivan : Physical Computing: Sensing and Controlling the World with Computers

Assumptions:

You will provide a laptop computer capable of running the Arduino development environment (Mac or PC)

You will contribute to the class blog with constructive posts ("good citizen points").

You will post descriptions, drawings and photos, and video of all your projects on your blog.

Grading: 40% (bi)weekly exercises: (based on elegance of construction, complexity, workingness, documentation)

30% class project

15% class participation including on-time presence, participation in class, and blog contribution

15% readings (blog report, class presentation)

The weakest exercise grade may be dropped.

Undocumented work will not be graded.

Late work submitted less than one week after the deadline will be downgraded.

Late work submitted more than one week after the deadline will not be graded.

The School of Architecture asks that syllabi state:

- Faculty course evaluations are a requirement for all students.
- Grades of "Incomplete" are granted only for legitimate extended emergencies (with evidence) as stated in both the school handbook and the university handbook. Likewise, no work may be submitted after the completion of the published deadlines at the end of the semester as a means to improving one's grade.

