

Syllabus & Course Policies
DMS 550 - Methods of Making II

State University of New York at Buffalo
Department of Media Study
Fall 2015

F 9:00am-12:40pm CFA 246

Instructor: Brian Larson Clark
Office hours: Tuesdays 4:00-5:00pm (and by appointment), CFA 246
Email: blclark2@buffalo.edu

Course Website: <http://media-study.com/fall15/methodsofmaking2>

Course Description

This course introduces basic concepts and techniques for designing, constructing, and programming objects, spaces and media that sense and respond to their physical surroundings. Moving beyond the interface paradigm of screen, keyboard and mouse, physical computing enables alternate models for interaction with (and through) computers that afford more subtle and complex relations between a range of human and non-human actors. Combining readings, presentations and discussions on the theory of computer enabled art forms with a series of hands-on technical workshops in computing methods and techniques, the course provides a critical context for emerging forms of experimental practice. Topics include fundamental ideas in computing (languages, representation of thought), embodied interaction (situated actions, responsive systems), practical aspects of hardware design (electricity, electronics, microprocessors, components, sensors and actuators), and functional programming (variables, datatypes, control structures, functions, objects, communication protocols).

No prior expertise in computing required. Curiosity about how things work is a must.

Required Texts

All required text will be distributed as pdfs and will be available on the course website.

Recommended Texts

Sullivan, Dan, and Tom Igoe. *Physical computing sensing and controlling the physical world with computers*. Boston: Thomson, 2004.

Mims, Forrest M.. *Getting started in electronics*. 3rd ed. Lincolnwood, Ill.: Master Publishing, 2003.

Disclaimer

This syllabus is subject to revision by the instructor.

Office Hours

Tuesday 4:00-5:00pm, CFA 246. You are welcome to drop by during those hours or make an appointment to introduce yourself or discuss your work. If my regular office hours will not fit your schedule (If you have a class or work obligation during that time) talk to me or email me and we will work out an alternate time.

E-Mail

Be sure to check your UB email account regularly. When sending me an email please always include DMS-550 within the subject line.

Course Website

<http://media-study.com/fall15/methodsofmaking2>

Course Work

Unless otherwise specified, assignments and projects must be submitted by the beginning of class the day they are due. Late work will be penalized unless you have a reasonable excuse and make arrangements in advance. If you are having trouble turning in work due to circumstances beyond your control, please let me know.

Evaluation

Grades will be calculated as follows:

20% classroom participation/performance

20% Lab Journal

15% Project 1

15% Project 2

30% Final Project

Grading Scale

93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
69-65	D
64 or less	F

Academic Integrity

In general, you may not turn in work for this course which you will also use for credit in another course. If you have questions about this policy, please discuss it with me.

Offensive Content

In class we will examine a broad range of creative work. There may be selections with which some students will find offensive in content or tone. In such cases, students are permitted to leave the room without penalty, at their own discretion.

General Policies

A. Students who require special accommodations because of diagnosed disability should bring relevant documentation to the instructor and/or to the Chair, who will oversee arrangements with assistance from the Office of Disabilities.

B. Student athletes must provide an official letter with the dates of their meets and travel days during the first weeks of classes. Make up quizzes and exams that fall during those days must be rescheduled with the instructor at least 3 days before departure. As a rule of thumb, we will administer make-ups and move work deadlines to the day before the student leaves town.

C. Students are expected to turn off and put away mobile phones, pagers, iPods, CD players. Computers are ok.

D. Students are not allowed to eat in the classroom. Please eat before or after class.

E. Students are expected to follow the guidelines for appropriate behavior outlined in the University Catalog. Disruptive behavior will not be tolerated.

F. If you need to depart early, do so quietly after having cleared it with your instructor at the beginning of the class.

G. The grade of incomplete will be given only to students who have some serious, well-documented medical condition or in cases of family tragedy, etc. and who have satisfied the attendance policy and are missing only one major assignment. No incomplete will be given to substitute for a poor or failing grade or for any other reasons. A written agreement must be drafted and signed by the instructor and the student. The instructor reserves the right to request completion of the incomplete prior to the 12 months set by the University.

H. Final grades are final. Once grades are submitted they will not be changed. Thus, students should refrain from cajoling instructors (via email, phone, in person, etc.) into changing the final grade, which goes against the University policy.

Attendance

You are expected to be here each day, on time and ready to go. You are expected to have completed any assigned reading and to participate in class discussions, critiques, and the work at hand. Participation in class will account for part of the course grade.

- A. Regular attendance is required for the development of proficiency skills.
- B. Attendance means attentiveness, cooperation, and active participation in class.
- C. Students are responsible for the material covered and the homework assigned on the day/s they were absent
- D. In case of an ongoing problem, such as a personal crisis or chronic illness, the student should resign from the course and retake it when the circumstances allow for the fulfillment of the requirements.
- E. Tardiness: arriving after class has started may count as an absence or partial absence.
- F. Leaving the classroom for a considerable period of time will be considered an absence.

It is a long semester and things come up, so you may miss class a total of three (3) times for any reason, but after that your final grade will be automatically reduced a half-letter grade for each additional absence.

Class Work

- A. Students are expected to do their own work on all assignments and course work.
- B. Academic dishonesty will result in a failing grade and disciplinary actions by the university. Examples of academic dishonesty are: copying the work from the Internet or a book, having someone else do the work for you, or cheating during an exam or quiz.
- C. Be prepared for class each day by having done the assigned readings, etc.
- D. Homework will be assigned during each class by the instructor.
- E. It is the student's responsibility to bring any questions on the homework to the attention of the instructor.
- F. Homework will be turning in to the instructor on the designated date.

Course Schedule & Assignments

This is a tentative schedule. Expect it to change. Due dates and expectations will be announced in class.

WEEK 1

9/4

Introduction to course

Topic: Physical computing

Course website will be created

WEEK 2

9/11

First project introduced

Topics: Basic electronic components, reading schematics, using a multimeter, soldering

WEEK 3

9/18

Topic: Basic Electronics, continued

WEEK 4

9/25

Topics: Overview of microcontrollers, introduction to Arduino

Topic: Working with sensors

WEEK 5

10/2

Topics: Actuator design, pulse width modulation (PWM), analog to digital conversion, working with servos and stepper motors

Assignment: First project due

WEEK 6

10/9

Second project introduced

Topics: Data types, protocols, working with serial data

WEEK 7

10/16

Topic: Concepts in interaction design

Software: Processing

WEEK 8

10/23

Topic: Concept development tools, circuit design, flowcharts

WEEK 9

10/30

Topic: Open source

WEEK 10

11/6

Topic: Hacking hardware, low-tech sensors and actuators

Possible Workshop: Circuit bending

Assignment: Second project due**WEEK 11**

11/13

Topic: TBD

WEEK 12

11/20

Topic: Intro to Custom PCB Fabrication

Gerber files and printing your own PCBs

Software: Eagle CAD

WEEK 1311/27 **Thanksgiving Break - No Class!****WEEK 14**

12/4

Project tuning and documentation

Final Project Review

WEEK 15

12/11

Project Exhibitions

Assignment: FINAL PROJECTS DUE

Useful Online Resources

Acroname: acroname.com

Active Surplus Electronics: activesurplus.com

Adafruit Industries: adafruit.com

Arduino: arduino.cc

DigiKey Electronics: digiket.com

Hack A Day: hackaday.com

Instructables: instructables.com

Inventables: inventables.com

Make Magazine: makezine.com

Mouser Electronics: mouser.com

Octopart: octopart.com

Openbuilds: openbuilds.com

Processing: processing.org

Pure Data: puredata.info

Solarbotics: solarbotics.com

SparkFun Electronics: sparkfun.com

Stack Exchange: stackexchange.com

Radioshack: radioshack.com

Thomas Kim: youtube.com/user/yeosujjang

Tom Igoe's Physical Computing Resources: tigoe.net/pcomp/resources