

# FUNDAMENTALS OF ART WITH TECHNOLOGY

Spring 2010, ARTTECH (ATS) 2101-002

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## HOURS

Wednesday's 9am-4pm, Spring 2010  
MC: B1-007  
MC: 917

## INSTRUCTORS

Margarita Benitez <mbenit@saic.edu>  
Matthew Nelson <mnelso3@saic.edu>

## COURSE DESCRIPTION

This introductory team-taught course is the prerequisite for most additional coursework in the art and technology department. Students are given a broad interdisciplinary grounding in the skills, concepts, and hands-on experiences they will need to engage the potentials of new technologies in art making. Every other week, a lecture and discussion group exposes students to concepts of electronic media, perception, intermedia composition, emerging venues, and other issues important to artists working with technologically based media. Students will attend a morning & afternoon section each day to gain hands-on experience with a variety of forms and techniques central to technologically-based art making.

## **KINETICS DESCRIPTION**

Mich. Bldg., Room: Basement - 007  
Instructor: Margarita Benitez

From the industrial revolution to the present digital revolution, the machine has been woven into the fabric of our landscape. Art movements of the 20th century have reacted to these changes in our landscape. Technology has affected the deepest reaches of our landscape and our minds. How then do we integrate the world of technology with the world of our art? The kinetics section of Fundamentals of Art with Technology explores the making process. We will investigate time-based composition, looking at how 4D digital and electronic mechanisms can be integrated into 3D art making practice.

Kinetics will introduce the components and processes of creating electronic sculpture. Conventional building materials of sculpture will be integrated with electronic components, allowing students to activate their artwork in real time. We will discuss basic electricity and how it can be safely used in artwork. The projects will incorporate electronic materials such as motors, lights, microcontrollers, transistors and other electronic components along side conventional building materials. Students are expected to experiment and discover all the materials presented in class.

## **PROGRAMMING & MULTIMEDIA DESCRIPTION**

Mich. Bldg., Room: 917  
Instructor: Matthew Nelson

The use of syntax to inform meaning upon a written language is nothing new. However using a syntax to inform meaning upon a written language that can be compiled and executed on a computer is a relatively new idea. Code is the only language that can be executed. Through learning syntax and data structures you will begin to write code that will have the functionality of manipulating digital media. As an artist in today's technology rich world the ability to use code as a medium is powerful. This releases you from the ideologies of being a user and enables you to make your own tools to create with.

In this section there will be small sketches that will be assigned each week. You are expected to come to class with your work the day the work is due. You will be provided with many resources that are freely available to assist you in and out of the classroom. Learning a computer language can be as difficult as learning a foreign language, however trying is the most important part.

## **ASSIGNMENTS**

### **Research Presentation**

You will research an artist or artist-collective that interests you from the Information Arts website by Steven Wilson: <http://userwww.sfsu.edu/~infoarts/links/wilson.artlinks2.html>. You will present your selected artist or collective to the class.

1. Email instructor with artist's name and link 1 week before presentation.
2. Presentation should last about 10-15 minutes.

3. Cover the following in your presentation:
  - Present documentation of the artist from the chosen artist's website
  - Discuss the work and concept behind the artwork shown
  - Address the technology used by the artist in the artwork
  - Tell us what you like about this artist and the artwork shown
  - Take questions

### **Midterm: The Machine**

Learning in the environment of the Kinetics/Electronics facility students will be introduced to the different functions and essentials of a fabrication shop. The first project will span the first half of the semester. After attending workshops on electronics and basic mechanical fabrication students will purchase a group of components on a field trip. Each student will develop a project that incorporates one or more of the basic design examples discussed in class. In this project student will work individually, learning the fundamental elements needed to incorporate motion and light into sculpture. Each student's first project will be discussed in a critique at midterm.

- Submit a written proposal with a simple sketch of your idea on or before the date specified.
- Complete work and be prepared to discuss your work during the midterm critique.

### **Final Project: Integrated Systems**

For the second half of the semester students will work in pairs to build a project that performs to the script of a program, integrating the components and techniques students developed earlier in the semester. This project will be developed in both the morning and afternoon section. Students will be able to experiment with programming as a means of sequencing and controlling their artwork. Programming of the artwork will be made possible through use of the Arduino board. We will critique this team project the final day of class.

- Submit a written proposal with a simple sketch of your idea on or before the date specified.
- Complete work and be prepared to discuss your work during the midterm critique.

## **REQUIREMENTS**

Essentials you will have to Purchase:

1. Required Materials from American Science & Surplus: \$20.00.
2. An Arduino Kit from the ATS resale: \$ 37.50
3. If you do not have your own laptop you will be required to purchase a USB jump drive.

There are many technical issues that are covered in this course; students should bring a folder for handouts and a notebook for lecture notes. Students will also be given supplemental reading assignments including, recent work by artists in the field, electronic reference sources and lists of suppliers for future projects. Your first week of class readings will be handed out. However, for remaining semester readings will be available online. It is

your job each week to read the material online and bring it to the next class either as an electronic file on your laptop or as a printout.

## **ATTENDANCE & PARTICIPATION**

Students are expected arrive for class on time at 9:00am (morning) & 1:00pm (afternoon). We will cover a lot of material and concepts and your presence and participation are required to receive a passing grade. Please make sure to sign the attendance sheet upon arrival to each class session. If a student has more than 3 absences the entire semester they will receive a failing grade for the semester; this means on the fourth absence the student will not be eligible to pass the course. You must pass both the morning and afternoon sections of this course to receive a passing grade. Any necessary absences should be explained to the instructor. Students who are ill should contact their faculty member or leave a message for the instructor in the department office the day they are absent. For an extended absence due to illness, contact Health Services. Notification is then sent to all instructors informing them of the student's absence. For other extenuating circumstances contact the Academic Advising office. Please note that the written notification does not excuse a student from classes. The instructor gives students officially enrolled in a course credit only if they have responded adequately to the standards and requirements set. If the instructor does not clarify their requirements and absence policy in the course syllabus, students should ask the instructor. Also note that if a student registers late for a class (during add/drop) the instructor counts the missed classes as absences and the student is responsible for assignments given during those missed days.

## **RESOURCES**

### **Instructors**

- Ask questions during class
- Email questions outside of class

### **Department**

- **Ed Bennett**, Research Specialist
  - <http://kineticsandelectronics.com>
  - <sbennett@artic.edu>
- **Anna Yu**, Manager of Electronic & Kinetics Tech Facilities
  - <ayu@artic.edu>
- **Mark Anderson**, Manager, Art & Technology Department Facilities
  - <manderson@artic.edu>

### **API (Application Programming Interface)**

- **Processing**: <http://processing.org/reference/>
- **Arduino**: <http://arduino.cc/en/Reference/Extended>

## **PLAGIARISM STATEMENT**

The School of the Art Institute of Chicago prohibits academic misconduct, which includes "both plagiarism and cheating, and may consist of the submission of the work of another as one's own; unauthorized assistance on a test or assignment; submission of the same work for more than one class without the knowledge and consent of all instructors; or the failure to properly cite texts or ideas from other sources" (Students' Rights and Responsibilities, Student Handbook, [http://www.saic.edu/pdf/life/pdf\\_files/rights.pdf](http://www.saic.edu/pdf/life/pdf_files/rights.pdf)).

## **ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES**

Any student in need of academic adjustments or accommodations because of a disability should contact SAIC's Disability and Learning Resource Center (DLRC) at 312- 499-4278, or email [dlrc@saic.edu](mailto:dlrc@saic.edu). DLRC staff will review the student's disability documentation and will work with the student to determine reasonable accommodations. The DLRC will then provide the student with a letter outlining approved accommodations. This letter must be presented to the instructor, as early in the semester as possible, so that accommodations can be implemented. Students please contact the DLRC as early as possible.

## **SECTION SCHEDULE**

This course will be divided into 2 sections you will meet in each section for half the day.

- Section A will meet with Matthew Nelson in room 917 in the mornings and Margarita Bentiez in room B1-007 each afternoon.
- Section B will meet with Margarita Benitez in room B1-007 in the mornings and Matthew Nelson each afternoon.

## **WEEKLY SCHEDULE**

(Please note this outline may be revised as the semester progresses)

**WEEK 1:** Feb. 3, 2010

COMBINED (MI: 917):

Course introduction, Divide into A/B sections.

KINETICS

**Screen:** Art 21 Season One: Tim Hawkinson & previous student work  
**Homework:**

PROGRAMMING

Section Introduction, Processing - Programming Modes, Variables, 2D Primitives

**Screen:** Whitney CodeDoc

**Homework:** Review Processing Exhibition: <http://processing.org/exhibition/>, Sketch 1

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**WEEK 2:** Feb. 10, 2010

KINETICS

Begin discussion on electronics, look at switches, load devices.

**Screen:** Arthur Ganson.

**Homework:** read Kac article, review Electricity handouts.

PROGRAMMING

Processing - Variables, Relational Operators, Conditionals

**Screen:** OpenProcessing

**Homework:** Sketch 2

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**WEEK 3:** Feb. 17, 2010

COMBINED (Sensorium MC: 417)

**Screen:** Various videos

**Homework:** Write 1st project proposal. Give description and sketch for proposal.

**Field Trip:** American Science & Surplus - We will meet in the basement at 1:00 sharp. The class will leave as a group no later than 1:15. If you are late you are on your own and will be marked absent.

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**WEEK 4:** Feb. 24, 2010

KINETICS

Kinetics/Electronics Shop authorization

**Screen:** Project Proposal Due, discuss ideas.

**Homework:** 1. Review websites on fabrication. 2. Locate additional materials for projects

PROGRAMMING

Processing - Iteration, Debugging, Gestural Input, Machine Input

**Screen:** John F. Simon, Jr.

**Homework:** Sketch 3

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**WEEK 5:** Mar. 3, 2010

## KINETICS

Fabrication Techniques: tapping, drilling good measurement

**Studio:** mounting motors & coupling to actuators.

**Homework:** 1. review suppliers list on portal and order 2 catalogues. 2. work on projects

## PROGRAMMING

Processing - Time, Math, Review Logic, Loops & Syntax

**Screen:** John Gerrard, Paul Pfeiffer

**Homework:** Sketch 4

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## WEEK 6: Mar. 10, 2010

## KINETICS

**Studio:** Soldering demo; connect loads to power and switches

**Screen:** Jean Tinguely

**Homework:** continue to work on projects

## PROGRAMMING

Processing - Working with images, Input / Output, Image Manipulation, Filters

**Screen:** Jason Salavon

**Homework:** Sketch 5

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## WEEK 7: Mar. 17, 2010

## KINETICS

**Studio:** lab time for projects

**Homework:** continue to work on projects

## PROGRAMMING

Audacity Introduction, Processing - Working with audio, Recording, Editing, Filters, Sound Playback, Minim (Sound Library)

**Screen:** TBA

**Homework:** Sketch 6

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## WEEK 8: Mar. 24, 2010

## KINETICS

Review & critique first project.  
**Screen:** ARS Electronica 2008  
**Homework:**

## PROGRAMMING

Final Cut Pro introduction, Processing - Working with video, Loops, Interactive Loops  
**Screen:** David Rokeby, Camille Utterback, Scott Snibbe  
**Homework:** Sketch 7

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## **WEEK 9:** Mar. 31, 2010

COMBINED

(B1-007)

Arduino Demonstration & Distribute Arduino - Construction Techniques, Bread Board & Backer Board, Test Boards  
Final Assignment - Choose partners, Possible proposals discussed

**Screen:** Ars Electronica 2005  
**Homework:** Review Arduino, Write final project proposal with collaborator

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## **WEEK 10:** Apr. 7, 2010

COMBINED

(B1-007)

Advanced Registration - Discuss courses offered for Fall 2010  
Arduino Demonstrations  
Review Final Project Proposals

**Screen:** Ken Rinaldo  
**Homework:** Work on final project

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## **WEEK 11:** Apr. 14, 2010

COMBINED

(B1-007)

Identify the needed components & programming for projects. Reserve any media equipment need for your final from the Media Center.

**Screen:** Sabrina Raaf  
**Homework:** Work on final project

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**WEEK 12:** Apr. 21, 2010

COMBINED

(B1-007)

Complete wiring for projects & discuss armature needs. Begin testing/  
debugging.

**Screen:** SRL

**Homework:** Work on final project

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**WEEK 13:** Apr. 28, 2010

COMBINED

(B1-007)

Last class section to get help on final projects. Debug and test final projects.

**Screen:** Christian Moeller

**Homework:** Work on final project

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**CRITIQUE WEEK :** May 5, 2010

**NO CLASS**

Check lab open access hours. Meet with your collaborator and work on final project.

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**WEEK 14:** May 12, 2010

COMBINED (B1-007)

**FINAL CRITIQUE**

Critique schedule will be posted prior to class.

*Everyone is expected to attend the final critique, there will be no exception made for missing the final.*

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