# Interactive Interface Design

**Course Title:** Interactive Interface Design  
**Credits:** 4

**Textbook Information:**  
- The Critique Handbook: The Art Students Sourcebook and Survival Guide  
- Programming Interactivity: A Designer's Guide to Processing, Arduino, and Openframeworks

**Grading:** Regular  

**Course Description:** This course is an introduction to designing interactive interfaces for software and hardware. By emphasizing a conceptual approach toward interacting with technology, students learn creative coding techniques using the Processing language and Arduino microcontroller. These techniques bridge the gap between design, technology, engineering and art.

**Prerequisites:** None  
**Corequisites:** None  
**Registration Controls (Major, College, Level):** Graduate Level

**Minimum Qualifications Needed to Teach This Course:** Instructor, M.F.A or Ph.D

- Faculty contact, email and complete phone number: Mark Franz, mfranz2@fau.edu, 317-363-5008

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**Approved by:**
- Department Chair:  
- College Curriculum Chair:  
- College Dean:  
- UGPC Chair:  
- Graduate College Dean:  
- UFS President:  
- Provost:  

**Date:**  
- 12/6/13  
- 12/1/17  
- 11/14  
- 11/24/14  
- 3/13/14

2. Review Provost Memorandum:  
   - Definition of a Credit Hour: [www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf](http://www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf)  
3. Consent from affected departments (attach if necessary)

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Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

FAUnewcourseGrad—Revised September 2013
Class: DIG 6126, Interactive Interface Design
Day and Time: Monday, 6:00pm to 9:50pm
Room: ES 401
Department: Communication and Multimedia Studies
Term: Fall 2014
Credit Hours: 4

Professor: Mark Franz, MA, MFA
Contact Info: mfranz2@fau.edu
Phone: 312-361-0345
Office Hours:
(M) 5:00PM - 6:00PM
(T) 10:00AM - 1:00PM
(TR) 2:50PM - 4:00PM
Office Location: AT 829

Course Objectives:
Students in this course will develop a critical understanding of physical computing and interactive design. By the end of this course, students will have experience with creating serious games, data visualizations, and interactive art. These fields will provide the basis for learning various techniques for developing interactive hardware and software.

Course Description:
This course covers advanced techniques in the creation of interactive 2D and 3D computer graphics and hardware. Our goal is to design interactive environments that communicate aesthetic, narrative, and experimental qualities. We will also be designing custom hardware interfaces, using the Arduino microcontroller, to facilitate a unique experience of engagement with our software. We will be using the processing language as a primary approach to creating interactive graphic elements. We will continue this pursuit with the help of the Unity 3D game engine. Our primary goal will be to create software that engages its users with new and significant ideas whether they be historical, social, or theoretical.

Required Hardware:

Arduino:
http://arduino.cc/

Recommended Texts:
http://processing.org/learning/books/

List of Art Games:
http://www.artificial.dk/articles/artgamesnetworks.htm

Other places to buy your Arduino Uno:
http://www.arduino.cc/en/Main/Buy
Grades:
Attendance 20%
Assignments 40%
Midterm 20%
Final project 20%

Description of Final Project:
Using one of the techniques for developing interactive hardware and software covered in this course, design and create an original work of interactive art that embodies one of the theoretical concepts from our readings. In addition, write a 3-5 page paper discussing the concept you have chosen, and how it relates to your project.

Grading Scale:
A = 90 – 100
B = 80 – 89
C = 70 – 79
D = 60 – 69
F = 59 – 0

Attendance and Late Work:
Students are expected to attend all class sessions, come prepared to show their work, and actively discuss other student’s work.

Late arrivals and/or failure to bring completed work = one absence
3 absences = loss of a letter grade

Course Materials
Sketchpad
An external hard drive is strongly recommended.

Week 1
- Syllabus and Introductions
- Unity, Processing, Arduino, Maya
- Required hardware: Arduino, Breadboard, Jumper Wires, Joystick, Buttons, Resistors
  - Arduino Leonardo
  - Joystick
  - Breadboard, Jumper Wires, Resistors (Kit)
- Introduction to Unity
- Installing Unity
- Introduction to Javascript
- Assignment: Familiarize yourself with the Unity 3D game engine by completing the 3D Platform Tutorial found here. Due Week 2.
Week 2

- Creating Simple Assets in Maya
- Narrative, Treatments, and Style Frames
- Digital Tutors
- Rigging
- **Assignment:** Complete Maya tutorials and build assets for your game. Develop style frames and write a treatment (premise or narrative) for your interactive narrative. Due Week 3.

Week 3

- Javascript in Unity
- Variables, Loops, Arrays
- Object Oriented Programming
- Functions
- **Assignment:** Complete assets for your game. Start writing scripts for the animated and reactive elements of your interactive narrative. Due Week 4.

Week 4

- Arduino
- Programming for Arduino
- Interfacing with Unity
- Sensors and LEDs
- Quick introduction to fabricating with 123D Make and Maya
- **Assignment:** Sketch, design, and model three unique interactive interfaces. Think about incorporating open space, the full human body, environment, and gesture. Due Week 5.
- **Reading:** "Aaron Koblin Interview" @ [http://wiki.processing.org/w/Aaron_Koblin_Interview](http://wiki.processing.org/w/Aaron_Koblin_Interview)

Week 5

- 123D Make
- Fabricating custom game controllers
- Form and Function
- **Assignment:** Fabricate your designs from week 4. Due Week 6.
- **Reading:** [http://www.marxists.org/reference/subject/philosophy/works/ge/benjamin.htm](http://www.marxists.org/reference/subject/philosophy/works/ge/benjamin.htm)

Week 6

- Arduino and Unity continued
- Understanding Digital and Analog
- Using Switches and Resistance
Assignment: Install electronics into your fabricated objects and test interactivity with scripting in Unity. Due Week 7.

Reading: Tom Igoe Interview, @ http://wiki.processing.org/w/Tom_Igoe_Interview

Week 7

- Work Time
- Midterm Critique

Week 8

- Refining variables and parameters
- In class work time and critique
- Debugging
- Assignment: Refine and complete your interactive installation pieces. Due Week 9.
- Reading: "Realtime Art Manifesto" by Tale of Tales

Week 9

- Critique and Work time
- Assignment: Finalize interactive installation pieces. Due Week 10.
- Reading: "Realtime Art Manifesto" by Tale of Tales

Week 10

- Exhibition of interactive narratives
- Assignment: Download Processing and complete tutorials from processing.org. Due Week 11.
- Reading: "Realtime Art Manifesto" by Tale of Tales

Week 11

- Controlling video with Arduino and Processing
- Variables, Loops, Arrays, and Functions
- Object Orientation
- Camera demonstrations
- Assignment: Write a narrative for an interactive video installation including designs for an interactive interface. Due Week 12.
- Reading: "Theatre of the Oppressed" by Augusto Boal

Week 12
Video libraries for processing
- Variables and Syntax
- Functions
- Predefined Words
- If Else
- Classes
- Private and Public

Assignment: Gather video for your interactive video installation. Due Week 13.
Reading: “Videogames of the Oppressed” by Gonzalo Frasca

Week 13
- Critique
- In class work Time

Assignment: Fabricate the cases for your interactive interfaces. Due Week 14.
Reading: “Representation, Enaction, and the Ethics of Simulation by Simon Penny @ http://www.electronicbookreview.com/thread/firstperson/machanimate

Week 14
- Class Critique

Week 15
- In class work time
- In seat Critique

Week 16
- In class work time
- In seat Critique

Monday Dec. 3rd
- 7:00PM – 9:30PM
- Exhibition of final projects

Students with disabilities:
In compliance with the Americans with Disabilities Act (ADA), students who require reasonable accommodations due to a disability to properly execute coursework must register with the Office
for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, LA 240(954-236-1222); in Jupiter, SR 110 (561-799-8010); or at the Treasure Coast, CO 117 (772-873-3441) -- and follow all OSD procedures.

Academic Honesty and Plagiarism:
Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see http://www.fau.edu/regulations/chater 4/4.001_Honor_Code.pdf