

USC Iovine and Young Academy

Arts, Technology and the Business of Innovation

ACAD 280: Designing for Digital Experiences

Units: 4

Day-Time: Spring 2021, MW 3:00pm - 4:50pm

Location: IYH 112 & Online

Instructor: Aaron Siegel

Office: IYH

Office Hours: By email appointment.

Contact Info: aaronsie@usc.edu

IT Help: <http://iovine-young.usc.edu/ait/index.html>

Hours of Service: M-F, 8:30am - 5:00pm

Contact Info: iyhelp@usc.edu, 213-821-6917

Course Description

Interaction Design is the study of how people interface with machines, environments, and each other. The class focuses on how to construct effective and elegant software interfaces, design analytical displays of data, as well as explore unconventional and innovative methods of interaction. Students must combine their knowledge and skills from the disciplines of graphic design, programming, and human/machine interaction to develop their projects.

Learning Objectives and Outcomes

1. Understand concepts and principles related to interaction design, interface design, data visualization, and physical computing.
2. Learn the dynamics of social interactions mediated by technology and how to change them.
3. Develop creative ideas around the concepts of telepresence, network enabled objects, and interactive environments.

Prerequisites: ACAD 178: Digital Toolbox for Motion Graphics, ACAD 275: Dev I

Co-Requisites: None.

Concurrent Enrollment: None.

Recommended Preparation: Install SublimeText, Atom, Adobe Brackets, or the code editor of your choice.

Course Notes

The class will be a mix of technical demonstrations, software workshop exercises, lectures on the history and contemporary applications of interaction design, as well as collective critique sessions. Technical demonstrations may be recorded and shared with the students afterward for further review. Lecture materials will be made available on Blackboard.

Technological Proficiency and Hardware/Software Required

- Laptop computer with authorized installations of the following software:
 - Adobe Creative Suite (Photoshop, Illustrator, InDesign)
 - SublimeText, Atom, Adobe Brackets, or the code editor of your choice.
 - p5.js (www.p5js.org)
- Elegoo Arduino Uno Compatible Kit ([Amazon](https://www.amazon.com/dp/B078888888))

Required Readings and Supplementary Materials

- [Massimo Banzi and Michael Shiloh - Make: Getting Started with Arduino.](#)
- [Ben Fry - Computational Information Design.](#)
- [Lev Manovich - Introduction to Info-Aesthetics.](#)
- [Lev Manovich - What is Visualization?](#)

Assignments

1. Journal Project Pitch Checkpoint (5%)
 - Put together a 2 minute presentation in slide deck form (PDF preferred) about your journal project concept. Cover your data type, mechanisms for recording data, and initial ideas for representation and user interface functionality.
2. Data Progress Checkpoint (5%)
 - Submit a screenshot or sample file of your data collection so far.
3. Database Progress Checkpoint (5%)
 - Submit a screenshot of your database structure and content.
4. API Progress Checkpoint (5%)
 - Submit the server-side code you are using as an endpoint for your journal access.
5. Physical Computing Project Ideas (**Group Project**) (5%)
 - Submit ten (10) ideas for physical computing projects. Include a simple illustration for each idea. Keep your idea descriptions concise, brief, and tantalizing.
6. Frontend Moodboard and Mockups Checkpoint (5%)
 - Submit a moodboard and some mockup illustrations of your frontend interface.
7. Frontend Development Progress Checkpoint (5%)
 - Submit code and screenshots of your frontend development.
8. Physical Computing Progress Checkpoint (**Group Project**) (5%)
 - Submit code and photo or video documentation of your physical computing project development. Include a description of the current state and future milestones to reach.
9. Interaction Development Progress Checkpoint (5%)
 - Submit code and screen captures of your frontend interaction and animation experiences.
10. Journal Project (25%)
 - Begin recording regular activity about your life. Your records should be happening at least once a day, but the more frequent they are the more interesting your results will be. Your journal should not be a blog, instagram account, or series of tweets... think outside the box! Your journal must provide an interactive visual interface to your content that allows users to navigate it in an interesting way.
11. Physical Computing Project (**Group Project**) (20%)
 - Working in a group, select an everyday object and come up with a way to augment it with an Arduino microcontroller, sensors, and actuators in order to enhance or modify its functionality. Consider the interaction between the object and the user, and the end result of the experience. Write a one page paper about your contribution to the project as well as your team member's contributions.

Grading Breakdown		Grading Scale		
Journal Project Final	25%		A = 100 - 95	A- = 94 - 90
Physical Computing Project Final (Group)	20%	B+ = 89 - 87	B = 86 - 83	B- = 82 - 80
Journal Progress Checkpoints (7 x 5%)	35%	C+ = 79 - 77	C = 76 - 73	C- = 72 - 70
Physical Computing Checkpoints (2 x 5%)	10%	D+ = 69 - 67	D = 66 - 63	D- = 62 - 60
Class Participation	10%	F = 59 and below		

Assignment Rubrics

Student work will be assessed based on:

- Level of understanding and execution of software skills on assignments.
- Degree of complexity of the assignment goal both creatively and technically.
- Innovative application of tools and concepts.

Assignment Submission Policy

Submit all of your digital assets via Blackboard at least one hour prior to the start of the class session. Make sure you submit all related assignment assets and materials in a ZIP file.

Grading Timeline

Checkpoints and assignments will be reviewed, graded, and provided with feedback within a week of submission.

Academy Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by $\frac{1}{3}$ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

Weekly Course Schedule

Week	Monday	Wednesday
1	1/18: MARTIN LUTHER KING JR. DAY: No Class.	1/20: Syllabus and introductions. Journal Project. Workshop: Development environment. SublimeText. P5.js drawing basics.
2	1/25: Reading: Fry ch. 1 (introduction). DUE: 1: Journal project pitch checkpoint.	1/27: Reading: Fry ch. 2 (basic example), Manovich (introduction to info-aesthetics). Information Design. Playfair, Snow, Minard, Nightingale. Basic charts. Histograms, scatter plots, pie charts, line graphs. Understanding chart properties and variables. Exercise 1: Selecting Charts. Workshop: Loading data. Iterating over data. Data modeling. Custom classes. Sorting data. Basic chart drawing.
3	2/1: Interface to machine. Screen interface. Feltron, Fry, Weskamp, Wattenberg. Moodboards, wireframes, flowcharts, mockups. Interface elements. Responsive design. Design and the Elastic Mind exhibition.	2/3: Reading: Fry ch. 3 (background), Manovich (what is visualization). DUE: 2: Data progress checkpoint. Workshop: Introduction to Node.js. Relational Databases. SELECT. GET and POST.
4	2/8: Typography. Typesetting. Labels & Legends. Discovery vs. explanation. Accessibility and legibility.	2/10: Reading: Fry ch. 5 (process). Workshop: INSERT, UPDATE, and DELETE. Exercise 2: Labels & Legends.
5	2/15: PRESIDENT'S DAY: No Class.	2/17: Acquiring data. APIs. Data dumps. Parsing data. Scraping data. Spidering. Hacking. Interface to each other. Telecommunication. Telepresence. Social Media. Mash-ups.
6	2/22: Reading: Fry ch. 6 & 8 (tool, closing). DUE: 3: Database progress checkpoint. Workshop: Designing an API.	2/24: Workshop: Handling users. Cybersecurity. Exercise 3: DataQuest.
7	3/1: Sharing. Ranking. Taxonomy vs. Folksonomy. Crowdsourcing.	3/3: DUE: 4: API progress checkpoint. Workshop: Join tables. Multi-user data. Exercise 4: Multi-user service.
8	3/8: Locative media. GIS. Cartography projects. Wayfinding. Navigation.	3/10: DUE: 5: Physical computing project ideas. Workshop: Geolocation in JavaScript. Exercise 5: Locative media application.
9	3/15:	3/17:

	Interface to environment. Physical computing. Hardware interface. Microcontrollers. Haptics. Teledildonics.	Reading: Banzi ch. 1-3 (introduction, the arduino way, the arduino platform). DUE: 6: Frontend moodboard and mockups. Workshop: Introduction to Arduino and electronics.
10	3/22: Smart objects. Talk to Me Exhibition. Product design.	3/24: Reading: Banzi ch 4-5 (really getting started with arduino, advanced input and output). DUE: 7: Frontend development progress. Workshop: Sensors.
11	3/29: Smart spaces. Electroland, UVA, Random International. Public space. Urban infrastructure. Transportation.	3/31: DUE: 8: Physical computing dev progress. Workshop: Actuators. Exercise 6: Installation ideas.
12	4/5: Internet of things.	4/7: WELLNESS DAY: No Class.
13	4/12: Reading: Banzi ch. 7 (talking to the cloud). Workshop: Connecting Arduino to the internet. DUE: 9: Interaction development progress.	4/14: GROUP WORK/INDIVIDUAL CHECK-INS
14	4/19: GROUP WORK/INDIVIDUAL CHECK-INS	4/21: GROUP WORK/INDIVIDUAL CHECK-INS
15	4/26: DUE: 10: Presentation of journal projects.	4/28: DUE: 10: Presentation of journal projects.
FINAL	Friday, May 7th, 2pm - 4pm. DUE: 11: Presentation of physical computing group projects. Submission of peer review essays.	

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) —213-740-9355 (WELL)

<https://studenthealth.usc.edu/sexual-assault/>

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Relationship and Sexual Violence Prevention and Services provides immediate therapy services for situations related to gender- and power-based harm (e.g., sexual assault, domestic violence, stalking).
(wording from the site)

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086

equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

USC Policy Reporting to Title IX (213) 740-5086

<https://policy.usc.edu/reporting-to-title-ix-student-misconduct/>

The university encourages individuals to report prohibited conduct to the *Title IX Office*. Individuals can report to the university *Title IX Coordinator* in the *Office of Equity and Diversity*.

Bias Assessment Response and Support - (213) 740-2421

studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.