USC Iovine and Young Academy
Arts, Technology and the Business of Innovation

ACAD 280 - Designing Digital Experiences
Units: 4
Day-Time: Spring 2024, TR 2:00pm - 4:50pm

Location: IYH 211

Instructor: Aaron Siegel
Office: IYH 211 or Zoom meeting room listed on Blackboard.
Office Hours: In person: IYH 211, Tuesdays, 12:00pm - 1:45pm.
　　　　　　　 Zoom: Tuesdays, 6pm - 8pm at this link.
Contact Info: aaronsie@usc.edu

IT Help:
https://uscedu.sharepoint.com/sites/IYAStudent/SitePages/IT-Resources.aspx
Hours of Service: M-F, 8:30am - 6:30pm
Contact Info: iyahelp@usc.edu, 213-821-6917

Course Description
Information design is the practice of transposing large sets of numeric information into visual representations for more immediate understanding, increased legibility from a holistic perspective of the subject matter, and the ability to analyze a subject beyond looking at individual data recordings. 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 and user interface design. Students must combine their knowledge and skills from the disciplines of graphic design, computer programming, and human/machine interaction to develop their projects. The course is a mix of technical challenges as well as conceptual obstacles that students must critically examine in order to effectively overcome and execute their assignments to their fullest potential.

Learning Objectives
By the end of the semester, students will be able to:
- Understand concepts related to interaction design, interface design, and data visualization.
- Gain fundamental design and development skills required to develop a web service platform.
- Prototype interface experiences using Figma.
- Understand object-oriented programming and data management in JavaScript.
- Understand creation and maintenance of relational databases for web applications.
- Create live-rendered interactive graphic animations for the web using P5.js and WebGL.

Prerequisites: ACAD 275: Dev I.
Co-Requisites: None.
Concurrent Enrollment: None.
Recommended Preparation: ACAD 177: Digital Toolbox for Design, ACAD 276: Dev II, or previous experience coding in JavaScript, PHP, and SQL.

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 will be recorded via Zoom 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 (or access) of the following software:
    - Visual Studio Code or code editor of your choice.
    - P5.js.
    - Figma.

Required Readings and Supplementary Materials
- AIGA Eye on Design: Processing: the Software that Shaped Creative Coding. Parts 1 & 2.
- Ben Fry - *Computational Information Design*.
- Lev Manovich - *What is Visualization?*

Assignments
1. Journal: Pitch Presentation (2%)
    - Put together a 2 minute presentation in slide deck form (PDF file specifically) with **three** different ideas about data sources for your journal project concept. Cover your data type, mechanisms for recording data, and initial ideas for representation and user interface functionality. 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!
2. Journal: Data Collection (2%)
    - Begin recording regular activities about your life. Showcase what you have collected so far, the different properties you are collecting, the potential values for various properties and the range they fall within, as well as the granularity of the recordings.
3. Oura CBL: Data Analysis (GROUP) (2%)
    - Work with your group on analyzing the characteristics and properties of the data from the Oura devices.
4. Journal: Database Progress (2%)
    - Use phpMyAdmin (or equivalent tool for your database system) to view the structure and content of your database tables. Include all different tables and views that tie your data recordings together.
5. Oura CBL: Frontend Moodboard (GROUP) (2%)
    - Submit a moodboard of visual material to inspire the design of your frontend interface. Make sure you include consideration for colors, charts and graphs that have been used in other projects, as well as typographic design decisions.
6. Journal: Frontend Moodboard (2%)
    - Submit a moodboard of visual material to inspire the design of your frontend interface. Make sure you include consideration for colors, charts and graphs that have been used in other projects, as well as typographic design decisions.
7. Journal: API Progress (2%)
    - Document the application programming interface you have developed to serve up data for the front end of your application as well as potentially receive input of new data from you or visitors to your application.
8. Oura CBL: Frontend Mockups (GROUP) (5%)
    - Submit some mockup illustrations of your frontend interface. Start with considerations about the most effective chart/graph model to implement for your data and the questions you are posing against it, then get into further detail regarding color, typography, iconography, and user interface elements.
9. Journal: Frontend Mockups (5%)
    - Submit some mockup illustrations of your frontend interface. Start with considerations about the most effective chart/graph model to implement for your data and the questions you are posing against it, then get into further detail regarding color, typography, iconography, and user interface elements.

10. Oura CBL: Frontend Development (GROUP) (5%)
    ○ Submit code and screenshots of your frontend development progress.
11. Journal: Frontend Development (5%)
    ○ Submit code and screenshots of your frontend development progress.
12. Oura CBL: Project Final Presentation and Documentation (GROUP) (10%)
    ○ Presentation of interface design to Ellison Institute of Technology stakeholders.
13. Journal Project Final Presentation and Documentation (15%)
    ○ Your journal must provide an interactive visual interface to your content that allows users to navigate it in an interesting way. Consider the potential for users to sort and filter your data, view it in the macro and micro perspective, and what story you might tell about the dataset through your interface design.
14. Group Accountability Statement (2%)
    ○ Write a paragraph about the contributions, communication, and performance about each of your group mates' on the project, as well as a paragraph about your own contributions to the project. This is your opportunity to acknowledge the merits or shortcomings of your group mates as well as confirm that you are knowledgeable of their contributions.
15. Labs (25 assigned lab exercises throughout the semester, 1% each) (25%)
    ○ Lab exercises are intended to test your competency in the most recently covered technical or conceptual material, offer you immediate feedback on how to improve, and a regular form of assessment in lieu of quizzes or exams.
16. Readings (7 assigned readings throughout the semester, 2% each) (14%)
    ○ Write 5 bullet point responses/reactions to the content of each assigned reading.

Grading Breakdown		Grading Scale
Journal Project Pitch	2%	A = 100 - 95
Oura CBL: Data Analysis (GROUP)	2%	A- = 94 - 90
Journal: Data Collection	2%	B+ = 89 - 87
Journal: Database Progress	2%	B = 86 - 83
Journal: API Progress	2%	B- = 82 - 80
Oura CBL: Frontend Moodboard (GROUP)	2%	C+ = 79 - 77
Journal: Frontend Moodboard	2%	C = 76 - 73
Oura CBL: Frontend Mockups (GROUP)	5%	C- = 72 - 70
Journal: Frontend Mockups	5%	D+ = 69 - 67
Oura CBL: Frontend Development (GROUP)	5%	D = 66 - 63
Journal: Frontend Development	5%	D- = 62 - 60
Oura CBL: Final Presentation and Documentation (GROUP)	10%	F = 59 and below
Journal Project Final Presentation and Documentation	15%	
Labs (25x @ 1% each)	25%	
Reading (7x @ 2% each)	14%	
Group Accountability Statement	2%	

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 covered in class.

Assignment Submission Policy
Submit all of your digital assets via the shared class Google Drive folder at least one hour prior to the start of the class session. Make sure you submit all related assignment assets and materials (without zipping them).

Grading Timeline
Labs, assignments, and responses to assigned readings will be reviewed, graded, and provided with feedback within a week of submission.

Course 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 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 ⅓ 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. Additionally, students who need accommodations for religious observations should provide advanced notice to instructors and student athletes should provide Travel Request Letters. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

[Unless students provide an accommodation letter from USC's Office of Student Accessibility Services (OSAS)](#) or a letter from IYA Student Services detailing visa or travel restrictions, attendance and active participation is expected in the classroom. Any student with such accommodations should submit their accommodation document to the instructor as soon as possible to discuss appropriate accommodations.

Students who are experiencing illness should not attend class in person. Please inform the instructor in advance of any class sessions that you can't attend for medical reasons, and accommodations will be arranged to view recorded lectures and submit alternatives to any missed class participation. Students will not be penalized for not attending class in person under these circumstances.

Iovine and Young Hall Cleanout
The Academy is unable to store student projects and materials beyond the end of the semester. Students

must remove all projects and personal materials from the Creators Studio, lockers/locker room, and other classrooms by the end of each semester. **All projects and materials left in Iovine and Young Hall will be discarded the day after final exams end. No exceptions.**

Classroom Norms
Students are requested to stay off of their phones during the class session. All discussion in class should be focused on the course material currently being covered. Students should be considerate and respectful of their classmates and ensure that any criticism of work is constructive and delivered in a positive manner.

Zoom Etiquette
Students should only attend class via Zoom if they are sick, and only after sending the instructor an email notifying them of the student's condition. It is expected that cameras will be turned on and that participation may be requested when the student is called on.

Course Content Distribution and Synchronous Session Recordings Policies
USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. (Living our Unifying Values: The USC Student Handbook, page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relationship to the class, whether obtained in class, via email, on the internet, or via any other media. (Living our Unifying Values: The USC Student Handbook, page 13).

USC Learning Experience Evaluations
USC Learning Experience Evaluations otherwise known as course evaluations occurs at the end of the semester university-wide. It is an important review of students' experience in the class. Students will have 15-20 minutes of in-class time to complete the course evaluation form during the last week of class. Mid-semester evaluations will also be provided to Iovine and Young Academy majors and minors, and if found at-risk due to poor class performance, will be required to meet with their Academy advisor.

Weekly Course Schedule

Week	Tuesday	Thursday
1	**1/9:** Syllabus, Assignments, Introductions. Introduction to Journal Project. Lab #1: Group Journal Brainstorming.	**1/11:** Information Design Fundamentals. Information Design History. Lab #2: Chart Selection.
2	**1/16:** Class Field Trip to EIT. (2:45pm - 4:15pm) Introduction to Oura CBL Group Project.	**1/18:** DUE: 1: Journal Project: Pitch Presentations.
3	**1/23:** Reading #1: AIGA Eye on Design: Processing: the Software that Shaped Creative Coding. Parts 1 & 2. Workshop: Development environment. FTP and the webdev server. P5.js drawing basics. Lab #3: Basic Drawing.	**1/25:** Workshop: P5.js animation. Classes. Properties. Vectors. Methods. Functions. Conditional Statements. Lab #4: Basic Animation.
4	**1/30:** Cursor/Touch Based Projects. Workshop: Cursor/Touch Interaction in P5.js. Lab #5: Cursor/Touch Reactive Animation.	**2/1:** Keyboard Based Projects. Workshop: Keyboard Interaction in P5.js. Lab #6: Keyboard Reactive Animation.
5	**2/6:** Responsive Interfaces. Workshop: Responsive Design in P5.js. Lab #7: Responsive Parametric Animation Interface.	**2/8:** DUE: 2: Journal: Data Collection. Wasilly Kandinsky. Giorgia Lupi. Reading #2: Fry ch. 1 (introduction). Lab #8: Designing a Visual Language.
6	**2/13:** DUE: 3: Oura CBL: Data Analysis. Visit from EIT stakeholders. (2pm - 5pm) Oura CBL Progress Report Out.	**2/15:** Reading #3: Fry ch. 2 (basic example). Workshop: Loading data. Iterating over data. Data modeling. Custom classes. Sorting data. Basic chart drawing. Lab #9: Data Visualization with Example Data.
7	**2/20:** Graphic Design Fundamentals. Workshop: Figma Introduction. Lab #10: Interface Moodboarding.	**2/22:** Reading #4: Fry ch. 3 (background). Workshop: Introduction to PHP/SQL. SELECT. GET and POST. Lab #11: Reading from Database Table.
8	**2/27:** Color in Information Design. Workshop: Color theory in visualization. Lab #12: Color Palette Moodboarding.	**2/29:** DUE: 4: Database Progress. Typography. Typesetting. Labels & Legends. Workshop: Figma Interface Mockup Planning. Lab #13: Typography Moodboarding.
9	**3/5:** DUE: 5: Oura CBL: Frontend Moodboard. Reading #5: Fry ch. 5 (process). Workshop: INSERT, UPDATE, and DELETE. Lab #14: Insert Data into Database Table.	**3/7:** DUE: 6: Frontend Moodboard. Workshop: Relational Database Tables. Lab #15: Northwind Dataset Queries.

	3/12: *SPRING BREAK: No Class.*	3/14: *SPRING BREAK: No Class.*
10	*3/19:* Reading #6: Fry ch. 6 & 8 (tool, closing). Wireframing. Flowcharts. Interface Elements. Workshop: Figma Visualization Wireframes. Lab #16: 5 Interface Wireframe Options.	*3/21:* DUE: 7: API Progress. Workshop: Figma Visualization Mockups. Lab #17: Interface Component Mockups.
11	*3/26:* DUE: 8: Oura CBL: Frontend Mockups. Visit from EIT stakeholders. (2pm - 5pm) Oura CBL Progress Report Out.	*3/28:* DUE: 9: Frontend Mockups. Reading #7: Manovich (what is visualization). Web 2.0: Sharing. Ranking. Taxonomy vs. Folksonomy. Crowdsourcing. Lab #18: Social Media Data Brainstorm.
12	*4/2:* Sorting. Filtering. Alternative Graph Models. Workshop: Switching Application States. Lab #19: Alternative Visualization of Demo Data.	*4/4:* Workshop: Designing an API. Lab #20: Async Data Updates.
13	*4/9:* DUE: 10: Oura CBL: Frontend Development. Workshop: TBD Lab #21: TBD	*4/11:* DUE: 11: Frontend Development. Locative media. GIS. Wayfinding. Navigation. Workshop: Geolocation in JavaScript. Lab #22: Geolocation Brainstorm.
14	*4/16:* Cartography projects. Lab #23: Cartographic Representation.	*4/18:* Lab #24: TBD
15	*4/23:* DUE: 12: Oura CBL: Presentation of Project Final. Visit from EIT stakeholders. (2pm - 5pm) Oura CBL Final Presentation.	*4/25:* Lab #25: TBD
FINAL	*Thursday, May 2nd, 2pm - 4pm.* DUE: 13: Presentation of Journal Projects. DUE: 14: Group Accountability Statement.	

Statement on Academic Conduct and Support Systems

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the USC Student Handbook. All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the student handbook or the Office of Academic Integrity's website, and university policies on Research and Scholarship Misconduct.

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Policy for the use of AI Generators

Generative AI for the use of creating snippets of code is allowed as long as you credit the source and include the prompt you used in the comments within your code. Generative AI to create images for inspiration on directions to take your visualization is allowed for moodboarding and brainstorming purposes, but not as submissions for your lab exercises or assignments. Generative AI is not allowed for the rendering of charts, graphs, plots, or any other data representation as they are not reliable and can not be vetted for accuracy. Generative AI text generation is not permitted on reading reflection submissions.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - *(213) 740-9355 – 24/7 on call*
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

988 Suicide and Crisis Lifeline - 988 for both calls and text messages – 24/7 on call
The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services

(though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL) – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX (EEO-TIX)](#) - (213) 740-5086
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services (OSAS)](#) - (213) 740-0776
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101
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
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) 442-1200 – 24/7 on call
Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or otfp@med.usc.edu
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.