

MIT 4.032 / 4.033

Design Studio: Information and Visualization – Syllabus

Credits 2-4-6 U/G

Fall 2018, Friday 2:00pm – 5:00pm

International Design Center (IDC N52-337)

Instructors:

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This course is a hands-on introduction to the concepts and processes of Information Visualization. Students will be introduced to visual and procedural examples, and then will draw processes from computer science, statistical analysis, graphic design, HCI and storytelling to engage a series of assignments which begin with data and result in interactive information visualizations. Topics include: locating potential stories in data, iterative methodologies, representational approaches, graphic languages, narrative structures and techniques, and leveraging user profiles, amongst others.

Objectives

This class is not intended to be a ‘how to code’ data visualizations. There are a lot of resources –books, libraries, and online tutorials– that explain how to create interactive visualizations.

They are very useful and we recommend reading it, as they can help with some of the assignments. However, we won’t go over them. This course will be a mix of lectures about and from the field, and work in class to show how to use information design and construct visualizations to explain and tell stories.

Coursework

Students are expected to produce work of a high caliber which not only satisfies the technical, formal and conceptual requirements of the assignments but also demonstrates independent thinking and originality in the way it communicates its intended meaning. Students can expect to spend approximately 10 – 12 hours per week depending, primarily, on their existing skills.

Tool Requirements

Download and install Git, and WebStorm / Sublime Text / Brackets and Python

Sign up for an account on GitHub.com

Fork and clone the GitHub repository [MIT-Information-Design-and-Visualization](#)

Course Resources

Course GitHub Master Repository: [MIT-Information-Design-and-Visualization](https://github.com/MIT-Information-Design-and-Visualization)

Course Website:

<https://iredelatorre.github.io/MIT-Design-Studio-Information-and-Visualization/>

Office Hours: (tbd Feb 9)

Glen Cummings: TBD via google hangouts

Irene de la Torre Arenas: Mon TBD, location TBD

TA: Paloma Gonzalez Rojas: TBD, location TBD

Rules and Regulations

The course moves quickly and each assignment builds on the previous, so students must complete readings, attend classes, submit their assignments on time. Attendance in studio and for the duration of all formal reviews is mandatory. Greater than two absences from studio without medical excuse supported by a doctor's note or verifiable personal emergency could result in a failing grade for the studio.

Students are expected to have an understanding of their own work and the issues that around it, and to be able to articulate them in presentations and meetings.

Grading

Grades from A to F will be assigned at both the middle and end of the semester. Only the end of semester grade is on record. The following criteria are used for assessment.

Deadlines: Where the projects completed on time?

Design: Did the projects demonstrate clear design concepts, that each expressed a unique perspective? Was there enough sketching and design iteration?

Code: Did the projects demonstrate an sufficient understanding of code? Was the code constructed in a way that facilitated iteration and modification in the later stages.

Participation: Did the student prepare for, and attend class? Did they actively participate in workshops, discussions, and critiques.

Schedule by Weeks

Week 1: Feb 9

Introduction

Lecture

Course Overview

Lab

Install GIT and a Web Editor (WebStorm/Sublime Text/Brackets); sign up for an account on github. Introduction to JavaScript

[Project 1: Clocks \(due on Feb. 14, 23.59\)](#)

Week 2: Feb 16

Translation

Lab

Critique: Clocks

Lecture

Information design that includes representations of time. Historic and emerging.

Week 3: Feb 23

Weather

Lecture

Maps and Spatial (vs Bar charts/ histograms)

Lab

Introduction to Forecast.io, in class work: sketching two weather apps. Individual work

[Project 2: Weather Apps. Sketches and mock ups of two Weather apps. Focus on typography and graphics](#)

Week 4: March 2

Weather – Usability

Lecture

UX

Lab

Review of mockups. Questions related to the code.

[Assignment: Weather apps \(due on March 7, 23.59\)](#)

Week 5: March 9

Weather – Legibility

Lab

Weather apps critique.

Discussion about both representations. Which one looks more appealing? Vs. Which one is easier to understand?

Week 6: March 16

Census Stories - Static

Lecture

Story in Data

Lab

Introduction to the Storytelling assignment (group project).

Presentation of the Census data and its different topics.

[Assignment: analyze the data, sketch multiple ideas.](#)

[Think about what each one is going to do and how.](#)

[Synthesize everything in a Elevator Pitch presentation.](#)

Week 7: March 23**Census Stories - Static II**

Lecture Spatio-Temporal
Lab [Elevator Pitch](#) presentations with summary of findings, sketches and work plan.
Work in class
[Assignment: Census Visualization \(due on April 4, 23:59\).](#)
[Sketch interactive add-ons for your project. How would they work? What type of information / use would it add to the project? Start researching how to implement them](#)

Spring Break (No Meeting March 31)

Week 8: April 6**Census Stories - Static III**

Lab Census (Static) Visualization Critique.
Use of interactive implementations such as filterings, transitions or animations.
[Assignment: Interactive Census Visualization \(due on April 11, 23:59\) .](#)

Week 9: April 13**Census Stories - Interactive II**

Lecture Interactivity History & examples
Lab Critique of Census Visualization II.
[Assignment: choose a dataset for your final project \(in groups\) and develop an initial analysis. Start first sketches / mock ups and produce a working plan. Start thinking about how the different elements should work / interact with each other. Start developing the visualization](#)

Week 10 / April 20**Final Project - First ideas**

Lecture Interactivity and Storytelling
Lab Presentation of the final project topics and first mockups. Is there a code implementation that needs to be reviewed? Bring your questions to the session.
Work in class.
[Assignment: keep working on the final project.](#)

Week 11 / April 27**Final Project - First ideas**

Lecture Inspiring Work 1
Lab [Assignment: keep working on the final project.](#)

Week 12 / May 4**Final Project - Final mock ups**

Lecture Inspiring Work 2

Lab [Assignment: keep working on the final project.](#)**Week 13 / May 11****Final Project - Final review**

Lecture Inspiring Work 3

Lab Class critique of the final visualization

[Assignment: apply the last feedback to your project.](#)[Refine and finish the visualization. Due on May 14th \(23:59\)](#)**May 17****Submit Final Project**Recommended BooksMeirelles, Isabel (2013): *Design for Information*. Beverly, MA: Rockport PublishersMurray, Scott (2013). *Interaction Data Visualization for the Web*. Sebastopol, CA: O'Reilly. Free online version at <http://chimera.labs.oreilly.com/books/12300000000345>Munzner, Tamara (2015). *Visualization Analysis and Design*. CRC PressHaverbeke, Marijn. *Eloquent Javascript*. Retrieved from <http://eloquentjavascript.net/>Page, Wilson. *An Introduction to DOM Events*. 2013. Accessed January 30.<http://www.smashingmagazine.com/2013/11/12/an-introduction-to-dom-events/>Readings

Fry, Ben. "Computational Information Design"

<http://benfry.com/phd/dissertation-110323c.pdf>

Kosara, Robert, and Jock MacKinlay. 2013. "Storytelling: The Next Step for Visualization."

Computer 46 (5): 44–50. doi:10.1109/MC.2013.36. Accessed January 31

<https://research.tableau.com/sites/default/files/Kosara-Computer-2013.pdf>Manovich, Lev, and Lev Manovich. 2010. "What Is Visualization?" *paj: The Journal of the Initiative for Digital Humanities, Media, and Culture* 2 (1). Accessed January 31<https://journals.tdl.org/paj/index.php/paj/article/view/19>.Moere, Andrew Vande, and Helen Purchase. 2011. "On the Role of Design in Information Visualization." *Information Visualization* 10 (4): 356–71. doi:10.1177/1473871611415996.Accessed January 31 <http://infoscape.org/publications/ivs12.pdf>Shneiderman, B. 2016. "The Eyes Have It: A Task by Data Type Taxonomy for Information Visualizations." In *Proceedings 1996 IEEE Symposium on Visual Languages*, 336–43. IEEE Comput. Soc. Press. doi:10.1109/VL.1996.545307. Accessed January 31<https://www.cs.umd.edu/~ben/papers/Shneiderman1996eyes.pdf>

Tom Griffiths, Typography Lecture. 2016. 42 min.

<https://www.youtube.com/watch?v=KzpUgRcBzPA>