**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
Course Website:
https://irenedelatorre.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**

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| **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.<br>Introduction to JavaScript<br>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<br>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.<br>Assignment: Weather apps (due on March 7, 23.59) |
| **Week 5: March 9** | **Weather – Legibility** | |
| | Lab | Weather apps critique.<br>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).<br>Presentation of the Census data and its different topics.<br>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**

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| Lecture | Spatio-Temporal |
| Lab | Elevator Pitch presentations with summary of findings, sketches and work plan.<br>Work in class<br>Assignment: Census Visualization (due on April 4, 23.59).<br>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**

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| Lab | Census (Static) Visualization Critique.<br>Use of interactive implementations such as filterings, transitions or animations.<br>Assignment: Interactive Census Visualization (due on April 11, 23:59) . |

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

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| Lecture | Interactivity History & examples |
| Lab | Critique of Census Visualization II.<br>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**

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| 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.<br>Work in class.<br>Assignment: keep working on the final project. |

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

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| Lecture | Inspiring Work 1 |
| Lab | Assignment: keep working on the final project. |

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| **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<br>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 Books

Meirelles, Isabel (2013): *Design for Information*. Beverly, MA: Rockport Publishers

Murray, Scott (2013). *Interaction Data Visualization for the Web.* Sebastopol, CA: O'Reilly. Free online version at http://chimera.labs.oreilly.com/books/1230000000345

Munzner, Tamara (2015). *Visualization Analysis and Design.* CRC Press

Haverbeke, 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