DESIGNING WITH DATA

(formerly Data Visualization)

"90% of the data in the world today has been created in the last two years."
– IBM report on big data

"Getting information from a table is like extracting sunlight from a cucumber."
– Arthur and Henry Farquhar

INFO

Instructor	Prof. Jeff Thompson (please call me Jeff)
Email	jeff.thompson@stevens.edu
Student hours	On Zoom, Wed 10.00am – 12.00pm EST
Drop-in hours	Mondays 9–10.45am EST
Weekly crits	Mondays 11am–12:50pm EST
Class website	https://github.com/jeffThompson/DesigningWithData

COURSE DESCRIPTION

What does a day of flight paths in the US look like? What can we learn about NYC by mapping shadows? How can a Twitter bot help us experience the minute details found in census data? Data visualization is a complex and varied field, found in a range of disciplines where the methodology ranges from scientific (full of stats and academic papers) to interactive online projects to illustrated infographics found in newspapers and even fine art that uses data as an input. This semester, we will be exploring through creative research projects the design challenges that data presents, think about how to tell stories with data, and how we record and represent the world through data.

We'll begin by considering a broad idea of what data might be and analog ways of presenting it, starting with a single number and then thinking about creative ways to show really huge numbers. From there, we'll start using Javascript (a programming language the web) and a library called chart.js which allows us to quickly load and tweak visualizations. Our projects will involve lots of research, finding our own data, and will be framed around two contemporary issues: climate change and race in America. We'll also look at ways to clean, parse, and publish our own datasets. The last third of the semester will be spent on a large-scale, open-ended visualization project of your choosing. Along the way, we'll also take a look at lots of visualizations made over the last thousand+ years, talk about best practices for artists and designers working with data, and see the varied career paths that designers interested in data can take.

This class assumes you've never worked with data or written code before. If you have, you'll be encouraged to push your work and make more complex projects. Students are encouraged to combine what we do with any additional software, materials, and processes that you're familiar with and/or excited about.

FORMAT

Of course, this semester is (now not so) quite unusual! While normally we'd be hanging out in a classroom together, this semester our class will be all online. We lose some things in that process but we also gain some: an online class means you can learn at your own pace and on your schedule, review materials as much as you like, make projects that can be shared online, and we can find creative ways to make and discuss art together, even if we're not physically in the same room.

Our main format will be:

- Weekly examples, sometimes in class but also available as video tutorials in a YouTube playlist
- Weekly homework projects that you'll work on independently and turn in on Canvas
- Regular group critiques of projects on Zoom at 11am EST – attendance taken!
- Drop-in hours during class and student hours; this is so you can ask more detailed questions, get help with your homework, etc

Where to find everything:

- Canvas: a good starting point to find assignments and due dates
- Github: all course materials including detailed assignments, links to video tutorials, code examples, images, etc

Because of this format and the technical nature of this class, it's really important that you stay on top of your coursework. Watching video tutorials, looking at code examples, and doing your homework will be on your own schedule but attendance at weekly critiques is mandatory and attendance will be taken.

Don't hesitate to reach out if you have any questions at all! Better to ask a question than be unsure of something. I also really (truly!) want to hear from you all on what is working and what's not in the online format. I can't know what it's like to be on your end of things unless you tell me, so please do!

ATTENDANCE

Because this class will cover so much technical material, and because our process of experimentation and critique is collaborative, attendance is mandatory. You are allowed two absences per semester to use at your discretion – each additional absence will result in your final grade being lowered by ½-letter. Late arrivals will be marked tardy, with 3

tardies equaling one absence. The only exception is severe illness – if this is the case, please let me know as soon as possible and provide a doctor's note documenting your illness.

HOMEWORK

Homework in this class is meant to be exploratory, a way to expand on the experiences and ideas in class. I encourage wide-ranging interpretation of assignments: consider ways that you can complete the project that are creatively and intellectually exciting for you, not fulfilling the basic requirements. (That said, some assignments will have restrictions on them – these kinds of constraints can spur creativity, so embrace them!)

Unlike studying for tests, projects require considerable engagement and thoughtful work on your own. All assignments are due by the start of class and should be turned in on Canvas – late projects will be marked down 10 points for each week they are late. Details of projects will be available on the class Github page (see link on the first page of this syllabus) including how to turn them in, what's to be included, etc.

GRADING

The goal of all assignments is for you to think and make. Everyone comes from different backgrounds and experience, so I'll be looking for improvement, curiosity, engagement, and a willingness to experiment more than mastery. A grading rubric will be provided with each assignment to help you understand what is expected and how well you did.

To get a C (an average grade) you should:

- Put time into your projects each week
- Complete everything on time
- Participate in critiques and discussions

For a B or an A, you should additionally:

- Take risks and try things enthusiastically
- Be an active and unsolicited participant in critiques and discussions
- Take assignments beyond their minimum requirements

Final grades will be determined as follows:

- Homework: 70%
- Class participation: 15%
- Final project: 15%

REQUIRED MATERIALS

Since most of this class is geared towards online visualizations, required materials should be very minimal. All students are expected to have access to:

- Firefox or Chrome
- Text editor (Sublime Text and Brackets are free and super, but feel free to use another if you prefer)
- Google Docs account (for working with and sharing data)
- Optional: Adobe Creative Cloud, either on your machine or via the Virtual Learning Environment (available free to all students)

Required and suggested readings will be provided as PDFs on Github or online with the library – there is no required textbook.

LEARNING ACCOMMODATIONS

The goal of this class is for everyone to succeed. Stevens and the VA&T program are dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis. If you have any questions about learning accommodations, please don't hesitate to talk with me during or outside of class.

PRONOUNS

As this course includes lots of interaction between students, it's important for us to create an environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronouns and chosen name affirmed. If the class roster does not align with your name and/or pronouns, please inform me of the necessary changes.

Note! If your professor has enabled the option, you can change your display name and add pronouns on Zoom.

INCLUSION STATEMENT

Stevens and the VA&T program believe that diversity and inclusiveness are essential to excellence in academic discourse and creativity. In this class, the perspective of people of all races, ethnicities, gender expressions and gender identities, religions, sexual orientations, disabilities, socioeconomic backgrounds, and nationalities will be respected and viewed as a resource and benefit throughout the semester. Suggestions to further diversify class materials and assignments are encouraged. If any course meetings conflict with your religious events, please do not hesitate to reach out to me to make alternative arrangements.