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	Wednesdays 10.00am–12.00pm EST and by appointment
Drop-in hours	Mondays 9–10.45am EST
Weekly crits	Mondays 11am–12:50pm EST
Zoom links	Links for weekly class meetings on Canvas
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 many disciplines where the methodology ranges from scientific (full of stats and academic papers) to interactive online projects for governments and non-profits to illustrated infographics found in newspapers and even fine art that uses data as an input. This semester, we will explore the many ways that design and data can intersect. Through a series of creative research projects, we'll think about the design challenges that data presents, 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 recording and presenting it. We'll explore really huge numbers and creative ways to show them. After that, we'll start using Javascript (a programming language for the web) and a library called chart.js which allows us to quickly load and tweak visualizations. These projects will involve lots of research, finding our own data, and will be framed around two pressing contemporary issues: climate change and race in America. 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; look

at ways to clean, parse, and publish our own datasets; 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 should leverage that experience to push your work and make more complex projects. You're also 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 ~~quite~~ now not so 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 technical tutorials, sometimes covered 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
- Required: regular group critiques of projects on Zoom at 11am EST
- Optional: 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.

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 AND PARTICIPATION

Because this class will cover so much technical material, and because our process of research and critique is collaborative, on-time attendance is required unless you are

currently outside the US and the time difference makes 11am EST difficult. Class meetings will be recorded so you can look at them asynchronously; most technical tutorials will be available as videos as well, though we may go through extra material in class.

During our time online together, we'll critique homework projects, discuss your research and data, have ideation sessions for projects, look at examples, and go over technical examples. For this to work, you should be as actively engaged as possible and class participation is part of your grade. This can take a range of formats: asking questions, giving feedback on projects, and participating actively in breakout rooms. That said, I totally understand that everyone's home situation is different and some weeks you might not be able to participate fully. The chat is an awesome alternative and I encourage you all to make use of it. Turning your camera on is not required but makes a huge difference for the entire class, if you can.

It should go without saying, but if you or anyone in your family gets sick please let me know right away and we can work out an arrangement. The same applies if you have the responsibility to care for an elderly family member or other obligations this year that make coming to or participating in class difficult.

HOMEWORK

Homework in this class is meant to be exploratory, a way to expand on the experiences and ideas in class. But, unlike studying for tests, projects require considerable engagement and thoughtful work on your own. 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!)

Due to the challenging nature of this academic year, due dates for assignments are a goalpost not a requirement: all late work will be accepted for full credit up until the final critique. We cannot critique late or unfinished work. However, turning in work (even if not fully done) on time will help you stay on track. If you find yourself getting behind, please reach out to me and we can discuss.

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 of a technical skill or idea. A grading rubric

will be provided with each assignment to help you understand what is expected and how well you did.

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, as needed: Adobe Creative Cloud, either installed on your computer 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! You can also go to Edit Profile on Zoom and change your display name and add pronouns. If your professor has enabled it, you can also change your display name during a meeting by clicking the little dot-thing next to your video.

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.