

Course Overview & Goals

This studio class explores information visualization through design principles that are integral to effective visualization projects. We will explore the distinction between formats that are static representations of knowledge versus formats that dynamically generate knowledge. Students will develop their skills in the presentation of information, with an emphasis on meaning and effective communication through abstraction, typography, and visual organization.

Learning Goals

The purpose of this class is to help students develop the skills to research and present quantitative and qualitative information to facilitate the understanding of complex subjects. Specifically, students will:

- Identify, research, and assemble data, statistics, and information
- Transform research into compelling, evidence-based visual storytelling
- Evaluate effective and ineffective info visualizations
- Refine typographic and visual communication skills

Structure

This is a studio course. Class time will be divided between lectures, group/individual critiques, and workdays.

Assignments are divided between three projects (two 3-week projects, one 6-week project) and readings. Note that work on the projects and readings overlap. The readings aim to provide historical context or contemporary philosophy to the field of information visualization. Additionally students will be asked to write and submit critiques of select visualizations, as well as review visualizations they find online.

In addition to regularly scheduled lectures, I will give short presentations at the start of crit days that will either be about reviewing example visualizations, notes on the readings, or providing practical/technical tips.

My office hours (aka 'drop-in hours' — no appointment necessary) are after every class, from 5:30-6:30 pm. If you are unable to make these times, email me (jaymey@uw.edu) to schedule an appointment.

The final exam/crit takes place **Tuesday, March 17, 4:30-6:20 pm**. The final project is due at the start of this time. No exceptions. Absences or leaving class early will negatively impact your participation grade.

Resources

Google doc of references, inspiration, resources, articles, etc about information design and visualization: <https://docs.google.com/document/d/1wvScy0QO4PyPo9akoW7bi2WrwiluSPMquMK41WL4AdY/edit?usp=sharing> [I will update this semi-regularly]

Expectations

- Arrive to class on time and prepared with your work. Chronic lateness, absences, or insufficient preparation will lower your participation grade.
- You are expected to remain in class for the duration of every class period, whether it's scheduled for lecture, crits, or as a work session. If the class has turned into a work session, please use the time to make progress on your projects or readings, or brainstorm with or get feedback from classmates. Leaving class early on work days will lower your participation grade.
- If you absolutely must miss class (or leave early/arrive late), please email me in advance. You are still responsible for all assignments and information covered in any classes you miss.

Course Overview & Goals (cont'd)

- Bring your laptop to every class.
- Back up your work regularly, either to a hard drive or a cloud service. You will not be excused for preventable loss of data.
- Be considerate of your fellow classmates: if someone is presenting their work, don't simultaneously use your device. Please give them your active attention.
- Check your UW email regularly. I will send notes and updates via the class email list or Canvas.

Grading criteria specific to this class

Grading is based on the following criteria:

- Quality of your work during the quarter, both visually and conceptually
- The design process: the extent of attention, exploration and variation completed throughout the quarter
- Individual contribution: engagement and communication with others during group discussions and critiques

Grading Breakdown

- Projects 1 + 2 (20%)
- Readings/Critiques (20%)
- Final project (40%)
- Participation: class participation, individual effort, and process (20%)

A note on how Participation will be graded

You will be evaluated on three criteria (in-class participation, individual effort, and process) throughout the quarter. This grade will be based on your activity throughout the term. You may ask me at any time how you're doing.

The grading rubric for Participation is as follows:

- 91 and above: Excellent effort; high-level of participation and engagement with the class. Student is prepared for every session and consistently engages in critique and discussion. Work demonstrates attention and improvement throughout every step of the creative process.
- 90 pts: Good effort, all three criteria fulfilled at a satisfactory level.
- 89 pts and lower: Lower effort, not all criteria fulfilled. Work is less than satisfactory.

4.0 Scale

The following criteria is used when determining grades:

- A **3.8–4.0** is given to a student who has exhibited the highest possible performance in all aspects of the course—final projects, the design process and participation are excellent. This student independently seeks out additional information on design and is highly committed/passionate about their work.
- A **3.4–3.7** is given to a student who exhibits superior performance in all aspects of the course—the final projects, design process, and participation are uniformly of high quality. This student has a thorough understanding of all concepts presented, and is motivated to improve and succeed.
- A **2.9–3.3** is given to a student who has good performance in most aspects of the course. This student follows a thorough design process, has good design work, and consistent participation that reflects a clear understanding of almost all concepts being presented.
- A **2.5–2.8** is given to a student who has fair performance in the course. The final work is adequate, with a design process that reflects the minimum needed to complete assignments. Participation and motivation are moderate.
- A **0.0–2.4** is given to a student with poor performance in the course. Projects are incorrectly prepared, incomplete or missing. This student does not understand the majority of concepts presented and rarely participates in class. This student is not prepared for subsequent courses in design.

Course Overview & Goals (cont'd)

Note: **All students are required to pass every design studio class with a minimum grade of 2.0.** Receiving a grade below the 2.0 benchmark will result in a one-quarter probationary period. Continued failure to pass subsequent design studio courses with a minimum 2.0 grade will result in expulsion from the design major.

UW SCHOOL OF ART + ART HISTORY + DESIGN POLICIES

A updated set of school policies (revised 9/16/19) is available on Canvas.
(It is also attached to the end of the PDF version of this syllabus.)

Des 384A: Information Visualization | Winter 2020

Jayne Yen | jaymey@uw.edu

Drop-in hours: T/Th, 5:30–6:30pm, Art 228, or by appointment

You are expected to remain in class for the duration of every class period, whether it's scheduled for crits, small group meetings, or a work session.

Schedule

	TUESDAY	THURSDAY
W.1	Jan 7 Lecture Begin Project 1	Jan 9 Lecture Project 1 work session
W.2	Jan 14 Project 1 crit: Group A (Ahmad–Nunez Abreu) Group B work session	Jan 16 Due: Readings/Critiques Set 1 Project 1 crit: Group B (Owyang–Zhu) Group A work session
W.3	Jan 21 Due: Project 1 Lecture Begin Project 2	Jan 23 Lecture Project 2 workday
W.4	Jan 28 Guest speaker: Eleanor Lutz Small group crits	Jan 30 Lecture as needed Project 2 check-in Small group crits
W.5	Feb 4 Due: Readings/Critiques Set 2 Project 2 crit: Group B Group A work session	Feb 6 Project 2 crit: Group A Group B work session
W.6	Feb 11 Due: Project 2 Begin Final project	Feb 13 Short presentation Initial research and feedback
W.7	Feb 18 Group A crit: Project focus & research Group B work session	Feb 20 Due: Readings/Critiques Set 3 Group B crit: Project focus & research Group A work session
W.8	Feb 25 Group B crit Group A work session	Feb 27 Group A crit Group B work session Due: PDF of work from this week
W.9	Mar 3 Group A crit Group B work session	Mar 5 Group B crit Group A work session Due: PDF of work from this week
W.10	Mar 10 Individual meetings. Work session.	Mar 12 Individual meetings. Work session.

Final crit: Tue, March 17, 4:30-6:20 pm

Final projects are due at the start of the assigned exam time.

You are expected to stay the full duration of the final crit. No exceptions.

Project 1: Context and Comparison

Create an 11x17 poster with 5 different approaches to visualizing carbon dioxide emissions. This poster is intended for a general audience (i.e., non-experts).

Carbon dioxide (CO₂) emissions are a known contributor to global warming. As something we've been hearing about for decades, perhaps we're all a bit complacent about what CO₂ emissions are, how they got to the number they're at now, and the impact they could have moving forward. How do you get a general audience to sit up and pay attention? What novel ways are there to help a user understand your particular message about this subject matter (without getting into misleading or confusing graphics)?

First, familiarize yourself with the data around CO₂ emissions. Then develop a few research questions to focus the visualizations in your poster. Use pencil/paper to sketch out possible ways to visualize the data around your questions. Finally move it into the computer to execute the final poster.

Projects in this class require a fair amount of initiative when it comes to research. This is an important starting point for any design project.

Background information, links to datasets, and inspiration

See google doc: https://docs.google.com/document/d/1wu6Wxn4qOhBi6zOhbon7IVSDJAAVAJ7kr9EHDRv_kLM/edit?usp=sharing

Research questions to get you started

- What are the primary causes of CO₂ emissions? (Can these be ranked? Can you see the change over time?)
- What are the effects of too much CO₂ in the atmosphere?
- How does this compare to the past? (Paleoclimatology)
- How does CO₂ compare with other factors of global warming?
- How many times has civilization addressed global warming through international policy? Can these efforts be mapped on a timeline?

Including text

As you'll see in many of the examples we're looking at in class, text is an integral part of the kinds of evidence-based storytelling we want to do. This includes everything from the titles, labels and keys for graphs, captions, source citations, and content in the form of paragraphs. Being meticulous about your work means really paying attention to this annotation layer.

Don't forget to include your name somewhere on the poster.

Schedule

Jan 7: Introduction to project. Discussion about what we know/don't know about CO₂. Discussion of possible research questions. First look at how to turn quantitative data into visual analysis.

Jan 9: Present research questions & low-fidelity sketches (all class crit)

Jan 14 & 16: Crits of medium-fidelity work (your sketches for the most part have been ported to the computer if they haven't already been, and you're beginning to refine typography and layout)

Jan 21: Final version due at start of class (paper + PDF)

Points

25

Project 2: Flow and layering

Develop a screen-based visual explainer for one of the recycling processes listed below. The outcome should be viewable in-browser, via a prototyping platform of your choice (InVision, Webflow, etc).

Topics: How does ____ get recycled?

- Paper (including cardboard)
- Plastic
- Electronic waste
- Clothing

How does our experience with form effect how we understand content?

As in Project 1, begin with research and really getting to know the available data. Think about your audience — what do you want them to take away from this information? Can you highlight the opportunities and challenges with this particular type of recycling?

This time we're also thinking a bit more about how the constraints of the screen and the role of scrolling might affect how information is processed. Instead of eyes darting all over the place for a single poster, you as the designer have a much stronger role in how information is parceled out from frame to frame.

Offer a step-by-step story, but also provide other types of information to enrich the user's understanding of the recycling process, by using annotations, spotlights, and more. (Include at least 4 other kinds of information in addition to your main graphic).

Background information and inspiration

See google doc: <https://docs.google.com/document/d/1liPTsK-y4Qb4H8i7bA7Xe3-ovl-dUeeUDP1HAKUT21A/edit?usp=sharing>

Audience

General (non-experts)

Don't forget to include

- A headline and a short introduction (25-50 words)
- Add captions or a key for how to read your data, if it's not obvious
- A list of sources and references at the bottom of your webpage. (Author/organization, title of article, URL, etc.)
- Your name

Schedule

Jan 21: Introduction to project

Jan 23: Develop research questions

Jan 28 + 30: Small group meetings (low-fi work)

Feb 4 + 6: Crits of medium-fidelity work

Feb 11: Final version due at start of class

Points

25

Final Project: Storytelling along multiple dimensions

Create a booklet that will inform a general audience about a complex science or technology subject through text, informational graphics, and visualized data. In addition, make the user's physical interaction with the booklet another vector of information. (We'll discuss this concept further in class.)

Part of the inspiration for this project comes from the Center for Urban Pedagogy's 'Making Policy Public' program (makingpolicypublic.net), which matches designers with nonprofits in New York to generate materials that help make laws and policies more visible to a wider public. Topics range from helping street vendors better understand their rights to disclosing the largely invisible process of political redistricting. Another source of inspiration is National Geographic's recent award-winning graphic that includes a simple but impactful method of showing readers what malnutrition in the very young looks like. (<https://www.nationalgeographic.com/pdf/childhood-malnutrition.pdf>)

Topic suggestions

- What is the endangered species act, and how has it changed over time?
- What is artificial intelligence and how does it work?
- How will climate change affect what we eat?
- How are volcanoes formed, and how dangerous are they?
- How does a camera work?
- You can also choose an existing science article as a source for inspiration. For example: look through the archives of Ed Yong, science writer at The Atlantic (<https://www.theatlantic.com/author/ed-yong/>).

Requirements

- Minimum 12 pages (this includes the cover). 8x10", staple bound
- Minimum 8 statistics/figures/data visualizations included
- Include a title and an introduction (around 100 words)
- Include a list of references

Grading

The overall final project counts for 40% of your total class grade. The final version of the booklet will be judged on a 100-pt scale. Additionally, you will be assigned points based on the work you bring and your contributions to the discussion in design crits on Feb 25/27 and Mar 3/5 (20 points each).

Schedule

Feb 11: Intro to project, brainstorm exercise

Feb 13: Initial research + feedback

Feb 18 + 20: Crits on project focus + research

Feb 25 + 27: Crits on low-fi work (Submit PDF of this week's work)

Mar 3 + 5: Crits on mid-to-hi-fi work (Submit PDF of this week's work)

Mar 10 + 12: Individual meetings

Final crit: Tue, March 19, 4:30-6:30 pm
Final projects are due at the start of the assigned exam time.

You are expected to stay the full duration of the final crit. No exceptions.
(Note: You will submit both paper and PDF)

Points

100 - final booklet
20 - Feb 25/27 crit
20 - Mar 3/5 crit

Readings & Visualization Critiques

The readings in this class aim to provide context and conceptual backgrounds to the work we're doing. In addition to reading selected articles/excerpts, you will also be reviewing/critiquing visualizations by responding to a set of questions outlined below. All writings should be uploaded to Canvas as PDFs.

Readings

For the readings in each set, identify three key takeaways from the articles/essays and tell us why you're highlighting them. (These takeaways could also be ideas you disagree with.) In either case, use a few sentences to lay out your argument. Each takeaway should be around 200-250 words.

Visualization critiques

In each set you will also critique existing visualization projects. (This will be a mix of visualizations I provide, as well as ones you find online — these can be static, interactive, physical installations, etc.) This is a mostly written response but you should also include links to and screenshots of the visualizations you've chosen (and perhaps detail screenshots of things you're trying to point out).

Using a few sentences for each, respond to the following questions for each visualization reviews:

- Describe the central focus and purpose of this visualization.
- Who is telling the story? (i.e., individuals, organizations, professions, etc) Where is the data coming from? Is the data accessible?
- Identify the forms (i.e., bar charts, scatterplots, maps, small multiples, etc) and design principles in use (i.e., color, Gestalt patterns, hierarchy, use of metaphor or comparison, etc.)
- Is this an effective visualization? Explain your response (this response should be a bit longer than the others). (Does the graphic help you understand that story better? Do the data and the story agree with each other? What parts might be missing, deliberately or not?)

Grading for readings/critiques is as follows:

- 18 pts: Good effort. Writing and critiques are thoughtful, specific, and original.
- Above 18 pts: Exceptional effort, in terms of both quantity and quality of writing.
- Below 18 pts: Low effort. Less writing overall. Unclear if did the reading, or did the reading thoroughly. Mostly copy/pasting what the authors said.
- - 2 pts: for every day turned in late
- - 4 pts: for missing parts (e.g., incomplete or missing critique of a visualization)

READING/CRITIQUE SETS (PDFs are available via Canvas)

Set 1 (due Thu, Jan 16)

- Read: Alberto Cairo, "The Functional Art" (Intro + Chapter 1 PDF)
- Read: "Understanding what makes a visualization memorable", John Wihbey, Northeastern University School of Journalism: <https://www.storybench.org/understanding-what-makes-a-visualization-memorable/>
- Critique: https://www.nature.com/news/polopoly_fs/7.42718!/file/Migration_Graphic.pdf
- Critique: <https://web.northeastern.edu/naturalizing-immigration-dataviz/>
- Critique: Choose one additional visualization to critique (include title and link if online, plus screenshot(s)).

Deadlines

Thu, Jan 16: Set 1

Tue, Feb 4: Set 2

Thu, Feb 20: Set 3

Max points for each set:

20

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Jayne Yen | jaymey@uw.edu

Drop-in hours: T/Th, 5:30–6:30pm, Art 228, or by appointment

Set 2 (due Tue, Feb 4)

- Read: Giorgia Lupi, “Data Humanism, the Revolution will be Visualized.” (Feb 2017)
<https://medium.com/@giorgialupi/data-humanism-the-revolution-will-be-visualized-31486a30dbfb>
- Read: Lena Groeger, “When the Designer Shows Up In the Design” (ProPublica, April 2017) <https://www.propublica.org/article/when-the-designer-shows-up-in-the-design>
- Critique: <https://www.theguardian.com/news/ng-interactive/2018/apr/04/gender-pay-gap-when-does-your-company-stop-paying-women-in-2018>
- Critique: Choose 2 other visualizations to critique (include title and link if online, plus screenshot(s)).

Set 3 (due Thu, Feb 20)

- Read: Viégas and Wattenberg, “Artistic Data Visualization: Beyond Visual Analytics” (PDF)
- Read: Michelle Correll, “Ethical Dimensions of Visualization Research” (PDF)
- Critique: Choose 3 different visualizations to critique (include title and link if online, plus screenshot(s)).

SCHOOL OF ART + ART HISTORY + DESIGN

UNIVERSITY of WASHINGTON

SoA+AH+D Policies

1. Equal Opportunity

- In concurrence with the University of Washington's core values, and in compliance with State and federal regulations, the School of Art + Art History + Design reaffirms its commitment to equal opportunity. The commitment extends to the recruitment of faculty, staff, and students who exhibit a dedication to creative and academic excellence and who demonstrate the ability to work with a diverse spectrum of populations.

2. Diversity

- The School of Art + Art History + Design fosters a respectful, inclusive community that supports creative and critical expression and scholarship amidst a culture that accepts the value of every individual. The School encourages students, faculty, and staff to engage in healthy dialogue and respect the values and global perspectives of a diverse population. The School promotes and encourages a culture of compassion, understanding, and an obligation to respectful discourse in classrooms, meeting rooms, studio spaces, and beyond. The School's philosophy is reflected in our engagement with community partners and research endeavors locally, nationally, and globally.

3. Student Code of Conduct

- The University of Washington has established rules regarding student conduct. Through the Student Conduct Code, UW students hold themselves to the highest standards of ethics, integrity and accountability.
- More information at UW Community Standards & Student Conduct (CSSC): www.washington.edu/cssc/

4. Equipment and Materials Safety

- Substances and equipment used in creative processes can be hazardous.
- Enrollment in a class requires students to know, understand, and comply with all safety and equipment use policies for each classroom/studio.
- Spray booths are mandatory for the use of aerosols.

5. Violence Awareness and Prevention

- Preventing violence, discrimination, harassment, and retaliation is everyone's responsibility.
- Call 911 for emergency help.
- Call 206-685-SAFE to report non-urgent threats or concerns.
- Safe Campus: www.washington.edu/safecampus
- Concerns about sexual harassment: depts.washington.edu/livewell/saris/sexual-harassment/
- NightRide provides a fare-free safe way for U-Pass members to get home at night: www.washington.edu/facilities/transportation/uwshuttles/NightRide
- Connect to UW Alert. Register your mobile device to receive instant notification of campus emergencies via text and voice messaging. Sign up at www.washington.edu/alert

6. Concerns about a course, an individual, or an issue

- If you have concerns about a course, an individual, or an issue concerning the School of Art + Art History + Design, talk with the instructor in charge of the class as soon as possible.

- If this is not possible or productive, make an appointment with the Director of Academic Advising, 104 Art, 206-543-0646 or the Director of the School of Art, 102 Art, 206-685-2442.

7. Disability Accommodation

- To request academic accommodations due to a disability, please contact Student Disability Services, 448 Schmitz, (206) 543-8924 (V/TTY) or uwdss@u.washington.edu
- Your instructor will receive an email outlining your academic accommodations prior to the first day of class. It is a good idea to discuss these accommodations directly with your instructor to ensure that your instructor can help you with your needs.

8. Class Participation

- First day attendance policy: Instructors assume that if you are not present for roll call on the first day of a studio art class you have decided not to remain enrolled. If you miss the first day without permission, it is your responsibility to drop the course. You may contact the instructor in advance and ask for permission to be absent on the first day.
- Participation is essential to learning and success in all classes. Absences from class prevent participation and may negatively affect grades. If you miss class due to illness or emergency, notify your instructor, provide documentation, and set up a timeline to complete missed assignments and exams.

9. Examination Schedule

- Students are required to turn in assignments and take exams based on the timeline provided in the class syllabus.
- Final exams are scheduled by the University and cannot be changed. Do not make plans that will prevent you from attending your final exam(s).

10. Plagiarism

- Plagiarism is using the creations, ideas, words, inventions, or images of someone else in your own work without formal acknowledgement or permission. This applies to written papers and research as well as to art, design and architectural images.
- Please check with your instructor if you have questions about what constitutes plagiarism.
- Instances of plagiarism will be referred for disciplinary action to the Vice Provost for Academic & Student Affairs.
- More information about reporting academic misconduct: www.uw.edu/cssc/report-it/

11. Copyright

- The School regularly displays student art and design in a variety of ways to highlight the quality of our students and their learning.
- This is traditional among all art schools and we assume that by participating in UW School classes and activities students have no objection.
- If you have concerns about the use of your work, please contact Academic Advising and Student Services (206-543-0646 or uaskart@uw.edu)

12. Incomplete Grades

- To request an “incomplete” grade a student must have:
 - been in attendance and done satisfactory work through the eighth week of the quarter
 - satisfactory proof for the instructor that the work cannot be completed because of illness or other circumstances beyond their control.
- More information from the UW Office of the Registrar: registrar.uw.edu/students/incomplete-grades/

13. Grade Appeal Procedure

- If you think the grade you received is incorrect, contact the instructor to discuss your concern.

- If not resolved, make an appointment with the Director of Academic Advising, 104 Art, 543-0646.

14. Materials Fees

- All art, design and art history classes have materials fees billed with tuition.
- Fee amounts and justifications are listed by class in the quarterly Time Schedule.
- These fees cover the purchase of materials, academic support, and equipment provided for students in each class.

15. Service Animals

- The University has a general “no pets” policy in all of its buildings. However, Service Animals are allowed to accompany their handlers while on campus
- UW Disability Resources for Students outlines the policies around Service and Emotional Support Animals: depts.washington.edu/uwdrs/current-students/accommodations/housing/service-and-emotional-support-animals/

16. Lockers

- The School provides lockers and locks to enrolled students. Cost is \$12 per quarter.
- Students can rent a locker from the Art Administration Office, Art 102. The office accepts cash, check, Husky Card, credit and debit (no Discover Card or American Express).
- Obey all rules and guidelines printed on the Locker Assignment sheet issued. Failure to do so will prohibit future locker privileges.
- Students must clean out or renew their locker before the last day of finals week each quarter. If lockers are not renewed before the last day of finals, the lock will be changed and items discarded.
- The School is not responsible for any lost, damaged, or stolen property stored in lockers.

17. Art Building Exhibition Policies

- Instructors and students must receive administrative approval at least two weeks in advance to install work in the Art Building.
- [Read these policies and complete the included application form.](#)
- Email the completed form to [Violetta Walker](#), SoA+AH+D Administrator, for approval.

18. After-Hours Access

- Students enrolled in studio classes and accepted SoA+AH+D undergraduate majors and graduate students can have their Husky Cards programmed to access the Art Building after-hours.
- After-hours access is permitted only through the loading dock door near the West corner of the building near the Jacob Lawrence Gallery. Swipe your pre-programmed Husky Card at the terminal for entry.
- Students may [request after-hours access to the Art Building for course-related work by filling out this form](#). Students will need to use their UW G Suite account to access the application form.
- Anyone in the building after hours is responsible for the safety and security of the building. Anyone who allows an unauthorized person into the building or a workspace, props open a door for any reason, or fails to adhere to their studio-specific safety policies risks losing after-hours access to the building.
- Accepted majors and graduate students only need to apply for access once a year for Autumn-Winter-Spring access. Non-majors enrolled in studio classes will only be allowed quarter access and once the quarter is over, their access will expire. The School will reset access for every major at the beginning of summer quarter.
- UWPB frequently monitors the Art Building after hours to insure your safety and security.
- If you are having access issues, visit Art 102 for assistance.

19. Religious Accommodation

- Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities.
- The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy \(https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/\)](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/).
- Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form \(https://registrar.washington.edu/students/religious-accommodations-request/\)](https://registrar.washington.edu/students/religious-accommodations-request/)