

STA313 – Data Visualization | How This Course Works

Welcome to STA313!

Prof. Fanny Chevalier
Fall 2022

A portrait of a woman with long brown hair and glasses, smiling at the camera. She is wearing a dark top. A large blue speech bubble originates from her position.

I'm Fanny Chevalier,
your instructor for this term

What Is This Course About?

This course is all about **data visualization**,
the art and science of turning data into readable graphics and charts.

Learning Objectives

1. to **understand** the principles of designing and creating effective data visualizations;
2. to **evaluate, critique, and improve** upon one's own and others' data visualizations based on how good a job the visualization applies principles for effective communication;
3. to correctly **apply** key techniques and theory used in data visualization science, including data models, graphical perception and techniques for visual encoding and interaction;
4. to correctly **identify** ethical issues related to data analysis and visual communication of data
5. to **use** R and modern data visualization packages and tools to create data visualizations;
6. to **work** effectively individually and collaboratively.

What Is This Course Not About?

- Programming
- Statistical methods

Syllabus

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>About this Course

This course is designed to be as interactive as possible. My role as instructor is to introduce you to theories, principles and tools for data visualization, which will be covered in the readings and the video lectures. Now, it is up to you to study these materials and actively engage in the activities throughout each class and practical. Many concepts may seem relatively easy to comprehend when passively listening to a seminar course, but in actuality, most of these concepts are non trivial to apply. In-class activities and practicals are designed for you to experiment, inquire, and make mistakes in a safe environment. Through this process, you will learn by doing. And you will do so before you are evaluated in the formal assignments.

♥ Accessibility, Diversity, Inclusiveness

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit.

If you have an acute or ongoing disability issue or accommodation need, we will implement appropriate accommodations to support your learning. For this, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting

<https://studentlife.utoronto.ca/department/accessibility-services/>. This will allow Accessibility Services to assess your situation, develop an

accommodation plan with you, and support you and the teaching team in applying adequate accommodations by issuing a [Letter of Accommodation](#)

. Remember that the process of accommodation is private: Accessibility Services will not share details of your needs or condition with the teaching team, and similarly, the teaching team will not reveal that you are registered with Accessibility Services. This formal process is necessary, as the

teaching team is not equipped to evaluate your personal situation: we are not health professionals, and so require professional assessment and

advice coming from Accessibility Services to best serve your needs. Without registration, you will not be able to verify your situation with us, and we

will not receive the professional advice from Accessibility Services about your accommodation needs. Note that it is your responsibility to forward your letter to the instructor, and request for accommodations timely as per indicated in the letter issued by AS.

Assignments are weighted by group:

Group	Weight
Quizzes	10%
Homework: Individual and Small Team Assignments	45%
Project	45%
Total	100%

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STA313H1 F LEC0101 20229:Data Visu

Welcome to STA31

What? This course is all about data visualization, the art and science of effective communication of data. You will learn the science behind effective visual communication.

Who? Meet the teaching team! You are the reason we are here. We are here because of your dedication, and support, and can't wait to see you grow throughout the year!



Prof. Fanny Chevalier
Book Sadprasid
Caitlin Harrigan
Emma St. John-Millson

How? This course is taught using a "flipped classroom" approach. Unlike a typical class where the lecture is presented in class by the professor, in this course you will have you watch the lecture for homework and then we will spend class time discussing the advantages to this model, that I further discuss in [this page](#).

Course Syllabus

MUST READ

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How Does This Course Work? Flipped classroom



Before Class

- Watch lecture video
- Read the readings
- Post ideas, questions, contributions

During Class

- Participate in activities
- Contribute to class discussion

Participation required
Beyond pre-class material
Interactive! Best part!

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Welcome to STA313: Data Visualization

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Prof. Fanny Chevalier Instructor	Book Sadprasad MSc student in Computer Science	Caitlin Harrigan PhD student in Computer Science	Emma Kroell PhD student in Statistics	Karan Panday PhD student in Computer Science	Warren Park PhD student in Computer Science	Michael Moon PhD student in Statistics
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How? This course is taught using a "flipped classroom" approach. What does this mean? Well, instead of the more typical class where the lecture is presented in class by the instructor and then you do practice for homework, this class will have you watch the lecture for homework and then we will use class time for practice and inquiry. There are several advantages to this model, that I further discuss in [this page](#).

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[week 0 - Sep. 8-9]

* Welcome & Set up your environment

- Tutorial/practical: [Welcome & Meet the toolbox](#) (Sep. 9)

[week 1 - Sep. 12-16]

* L1. What is Visualization?

- Lesson #1: [Lecture & readings](#) (Sep. 12)
- Tutorial/practical: [A quick tour of ggplot](#) (Sep. 16)
- **Tell us about yourself** : survey due Fri. Sep. 16 @midnight

[week 2 - Sep. 19-23]

* L2. Data Abstraction, Task Abstraction

- Lesson #2: [Lecture & readings](#) (Sep. 19)
- Tutorial/practical: Visualization brief: one dataset, many visualizations (Sept 23)

[week 3 - Sep. 26-30]

* L3 : Marks & Channels

- Lesson #3: [Lecture & readings](#) (Sept. 26)
- Tutorial/practical: You grade! (Sept. 30)
- **Quiz 1** : due Fri. Sep. 30 @midnight

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Week 1

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**Lesson
(to go over before class)**

Tutorial/Practical

Assignements

...

Lesson 1: What is visualization?

In this first lesson, you will learn about what visualization is, when we need it, and why.

1. LEARN Study the topic before coming to class

1.1. Study tips

As you go over the lesson materials:

- Summarize the important aspects of the reading and video lecture *using your own words*
- Write down things that you didn't fully understand, and questions you have about the content covered in the readings and video lesson

Application exercise relevant to this lesson:

- Think about instances when you encountered visualizations. For each, try to analyze: What was the visualization for? What did it help with? Was it needed? Why?

1.2. Readings (estimated: 30min)



Chapter 1 of *Visualization Analysis & Design*
by Tamara Munzner

PDF

1.3. Lecture (duration: 15min)

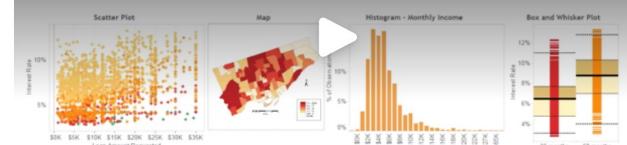
Slides

STA313-L1: Why Visualization?

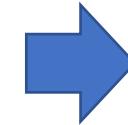
10 views · 0 likes · 0 comments

“ Computer-based visualization systems provide **visual representations of datasets** designed to **help people carry out tasks more effectively.** »

— Munzner 2014



How Does This Course Work? **Flipped classroom**



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During Class

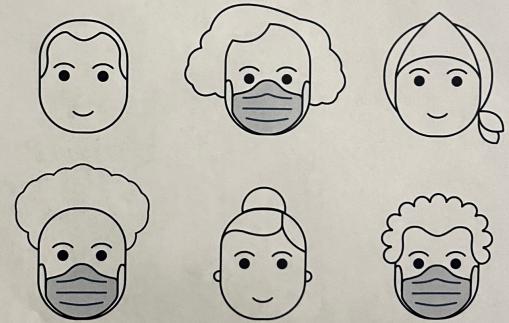
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In-Person



COVID-19: Protect Yourself and Your Community

**WE SUPPORT YOUR CHOICE:
FACE MASKS ARE OPTIONAL**



For specific work/activity mask requirements, please contact your supervisor.



The University of Toronto is closely monitoring the COVID-19 situation.
Please visit utoronto.ca for the latest updates.

Needed Technology



Grading Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

In-Class Activities: **Participation ≠ Getting it Right**



Actively engage:
Try, make errors, learn



Passive

Community Agreement

☰ STA313H1 F LEC0101

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STA313H1 F LEC0101 20229:Data Visualization

Welcome to STA313: Data Visualization

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Prof. Fanny Chevalier	Book Sadprasad	Caitlin Harrigan	Emma Kroell	Karan Panday	Warren Park
Instructor	MSc student in Computer Science	PhD student in Computer Science	PhD student in Statistics	PhD student in Computer Science	PhD student in Computer Science

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☰ Syllabus & Course Policies

♡ Community Agreement



Community Agreement

MUST READ

Below is our **community agreement** for this class. This is our shared agreement between learners and instructors about how we want to work together coming together.

RESPECT

We will give undivided attention to the person who has the floor (permission to speak).

OPENNESS

We will be as open and honest as possible without disclosing others' personal or private issues (e.g., family, roommates, friends). It is okay to discuss situations, but we won't use names or other identifiers. For example, we won't say, "My older brother...", instead we will say, "I know someone who..."

NONJUDGEMENTAL APPROACH

We can disagree with another person's point of view without putting that person down.

Professionalism

Disrespect or misbehaviour will absolutely not be tolerated.

You are expected to:

- Be *on time*
- Be *identifiable* (full name / uoft credentials)
- Be *engaged*
- Be *professional*
- Be *courteous* and *respectful* of others

How Does This Course Work?



Before Class

- Watch lecture video
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During Class

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How Does This Course Work?



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Tutorials/Practicals

Tutorials / Practicals

2. LET'S MEET Tell Us About Yourself, Meet Your Toolkit

Tell Us About Yourself

- What are you interested in this course? What are your expectations? What qualities make you a great learner and collaborator? Why are you interested in data visualization? What prior experience and knowledge do you have with visualization, coding, oral presentation, technical writing? What skills do you want to learn and/or improve?
- We would love to know! Your first assignment: fill out this survey so we get to know you better.

 Take the survey 

Tutorial/Practical on Friday

- Come meet the teaching team for an informal introduction and review of course logistics / syllabus / community agreement
- We will also present a walkthrough for you to set up your R/RMarkdown environment for this course
- You need to bring:
 - a computer laptop (or arrange with a classmate to work in pair with them, on a single computer)
 - make sure your computer battery is well charged before the session, as there are only a few power plugs

 Slides 

 R Code 

Meet the Toolkit!

STA313 - Data Visualization

Tutorials / Practicals

2. APPLY & PRACTICE Consolidate learning in class & practical

Class on Monday

- You will participate in activities in class
- You need to bring :
 - paper & crayons (several colours please!) for the activities OR a tablet with digital pen & a drawing application installed
 - your favourite stuff for taking notes

 **Slides** (posted after class)

Tutorial/Practical on Friday

- You will learn basics of using ggplot2 for visualization
- You need to bring:
 - a computer laptop (or arrange with a classmate to work in pair with them, on a single computer)
 - make sure your computer battery is well charged before the session, as there are only a few power plugs

 **Slides**  **R Code**

A tour of ggplot
STA313: Data Visualization

Needed Technology (Tutorials/Practicals)



Questions?

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Course Questions Piazza

24h policy: We will wait 24 business hours before answering questions on Piazza, to give each of you a chance to contribute an answer to other students' questions.

The screenshot shows the Piazza platform interface for the STA 313 course. The top navigation bar includes links for LIVE Q&A, Drafts, general, assignment_1, assignment_2, design_critique, project, tutorials/_office_hours, logistics, and other categories. The user Fanny Chevalier is logged in. A search bar and a 'New Post' button are also present.

The main content area displays a note titled "Welcome to Piazza!" posted by the instructor. The note states:

Welcome to Piazza! We'll be conducting all class-related discussion here this term. The quicker you begin asking questions on Piazza (rather than via emails), the quicker you'll benefit from the collective knowledge of your classmates and instructors. We encourage you to ask questions when you're struggling to understand a concept—you can even do so anonymously.

Piazza policy: Note that we will refrain from answering to questions for the first 24h after the question is posted on the Piazza forum, so as to give every one of you a chance to contribute answers to your peer's questions. We will of course endorse answers that appropriately and constructively answer questions, and add our answer where necessary.

We look forward to seeing you engage in constructive discussions and help your peers in this forum!

The note is signed off by "The STA 313 Teaching Team". Below the note, there is a section for "followup discussions, for lingering questions and comments". A text input field is provided for starting a new followup discussion.

At the bottom of the page, there are statistics: Average Response Time (N/A), Special Mentions (There are no special mentions at this time.), Online Now (1), and This Week (6).

Page footer: Copyright © 2022 Piazza Technologies, Inc. All Rights Reserved. Privacy Policy Copyright Policy Terms of Use Report Bug!

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Disability-Related Accommodations

If you are experiencing difficulties that affect your learning due to a disability or if you believe that you may have a disability; we encourage you to register with the University of Toronto's [Accessibility Services](#).

After registration, [Accessibility Services](#) will reach out to you to arrange an intake appointment with an Accessibility Advisor who is familiar with the area of disability identified in your registration packet. The Accessibility Advisor will work with you to recommend appropriate and reasonable academic accommodations and supports for both temporary and permanent disabilities.

Recommendations may include:

- Academic accommodations for classes, coursework and practicum (if applicable)
- Adaptive technology assessment
- Financial resources for eligible students
- Learning disability / ADHD assessment
- Learning strategy support
- Test / Quiz accommodations

For appropriate recommendation to be implemented, it is your obligation to identify your needs in a timely fashion. You can use the form to this effect to do so.

 Step 1: Register with Accessibility Services

 Step 2: File a request for accommodations

Non-Disability-Related Accommodations

Life happens, and I acknowledge that a number of exceptional circumstances can be an obstacle to participation to class and academic work. Besides the Letter of Accommodation issued by Accessibility Services, we accept the following documentation to support requests for accommodations:

- **Declaration of Absence:** The *Verification of Illness* (also known as a “doctor’s note”) is not required at the moment. If you are to be absent or were absent from academic participation for any reason (e.g., COVID, cold, flu and other illness or injury, family situation) and require consideration for accommodation, you should report your absence through the online absence declaration. The declaration is available through [ACORN](#) ↗ under the Profile and Settings menu. Note that we will not be automatically alerted when you declare an absence, and therefore it is your responsibility to upload your Absence of Declaration as part of a formal request for accommodation so that we can discuss any needed consideration, where appropriate.
- **Letter from your College Registrar:** In the case of personal extenuating circumstances that are not related to an absence (see Declaration of Absence) or disability (see Disability-Related Accommodations) and which incur challenges in participating to course work (e.g. financial struggle, housing crisis, etc...), we encourage you to contact your College Registrar to seek counselling and advice. Where appropriate, your College Registrar will issue a letter with recommendations of accommodations for instructors to implement, which you can attach to your formal request for accommodation.

Deliverable Extension Policies

With the benefit of advance notice regarding deliverable due dates, you are expected to make the necessary adjustments to your study schedules to make yourself available to successfully complete your coursework. You are expected to schedule your time with consideration given to the possibility that you may become ill or other extraordinary circumstances may arise. Deliverable extensions are provided only when students are unable to meet the original deadline because of serious extenuating circumstances. If an extension is granted, it will generally be proportionate to the delay caused by the problem that prevented you from completing the assignment on time (e.g. a one-week illness or severe injury having significant impact on academic performance may result in a granted extension of up to a week, whereas a one-day absence due to illness will not be considered as a valid motive for deliverable extension).

Don't wait last minute to work on your assignments!

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Questions?

Course-related question

If you have a question about course material or organization, such as,

- Is it appropriate to use this analysis method?
- What library would you recommend for plotting maps?
- What is the due date?

it should be posted on the discussion form.

Questions can be posted anonymously (so that the author is anonymous to other students but not to the instructors), if desired.

 Post my question on Piazza [↗](#)

Request for an Accommodation

If you want to contact us to request for an accommodation, such as,

- Special needs (e.g. per your letter from Accessibility Services)
- Missed work (e.g. illness, religious observance, ...)
- Extension for assignments due to extenuating circumstances

you should file an official request using the form below.

 Request for an accommodation [↗](#)

Marking concern

If you want to contact us regarding concerns with your grade, such as:

- I don't understand why I did lose marks on this question
- I disagree with the grader's feedback
- I think the grader made a mistake (e.g. they missed an element of answer)

you should use the marking concern form below.

 Report a marking concern [↗](#)

Anonymous Feedback

If you would like to anonymously report a concern and/or share suggestions for the course, please use the following link:

 Share feedback anonymously [↗](#)

Other Personal Concern

If you would like to directly reach out to me to set up a meeting or share a personal concern, please email me directly at the course email:

 Personal email to the professor

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❖ *Marking Concerns*

Any requests to have your work remarked must contain a written justification for consideration to the course instructors using the remark request form below. Remarking requests should be made within one week of receiving your graded work. Re-evaluation appeals are at the discretion of the instructors. Note that adjustments in marks will be rare and could equally result in a lowering or raising of the mark. If a re-evaluation is completed by the instructors, the student must accept the resulting mark as the new mark, whether it goes up or down or remains the same. When appealing a re-evaluation decision, the student accepts this condition.

 Report a marking concern 

Questions?

Course-related question

If you have a question about course material or organization, such as,

- Is it appropriate to use this analysis method?
- What library would you recommend for plotting maps?
- What is the due date?

it should be posted on the discussion form.

Questions can be posted anonymously (so that the author is anonymous to other students but not to the instructors), if desired.

 Post my question on Piazza [↗](#)

Request for an Accommodation

If you want to contact us to request for an accommodation, such as,

- Special needs (e.g. per your letter from Accessibility Services)
- Missed work (e.g. illness, religious observance, ...)
- Extension for assignments due to extenuating circumstances

you should file an official request using the form below.

 Request for an accommodation [↗](#)

Marking concern

If you want to contact us regarding concerns with your grade, such as:

- I don't understand why I did lose marks on this question
- I disagree with the grader's feedback
- I think the grader made a mistake (e.g. they missed an element of answer)

you should use the marking concern form below.

 Report a marking concern [↗](#)

Anonymous Feedback

If you would like to anonymously report a concern and/or share suggestions for the course, please use the following link:

 Share feedback anonymously [↗](#)

Other Personal Concern

If you would like to directly reach out to me to set up a meeting or share a personal concern, please email me directly at the course email:

 Personal email to the professor

Questions?

Course-related question

If you have a question about course material or organization, such as,

- Is it appropriate to use this analysis method?
- What library would you recommend for plotting maps?
- What is the due date?

it should be posted on the discussion form.

Questions can be posted anonymously (so that the author is anonymous to other students but not to the instructors), if desired.

 Post my question on Piazza [↗](#)

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Other Personal Concern

If you would like to directly reach out to me to set up a meeting or share a personal concern, please email me directly at the course email:

 Personal email to the professor

Personal Matters Course email

For personal matters only. Emails sent to addresses other than the course email will *not* be answered.

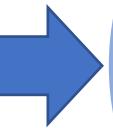
Allow up to 72 business hours for a reply.

- Object of email should be explicit
- Must be sent from your UofT official email address
- Must include your full name and student number
- Must include relevant context to help us recall you / the situation
- Must be written professionally

How Does This Course Work?



Before Class



During Class



Tutorials



Assignments

Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

Individual
Timed
Open book
Lowest
dropped

Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
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Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
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• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

Individual

Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

**With a
partner**

Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

In a group

Evaluation Scheme

Assessment	Weight	Due date
Quizzes	10%	~ every 3 weeks
Homework	40%	
• Assignment 1 (10%)		Oct. 14
• Assignment 2 (15%)		Nov. 18
• Assignment 3 (15%)		Dec. 9
Project	45%	
• Project: pitch (5%)		Nov. 10
• Project: mock-ups (10%)		Nov. 25
• Project: product (15%)		Dec. 16
• Project: demo video (15%)		Dec. 16
Participation	5%	all term long

❖ *Late Penalty*

All assignments are to be submitted on the due date. On-time submissions are graded as normal.

- Late quizzes are not accepted and there are no make ups for missed quizzes.
- For other assignments, late submissions will incur a penalty:
 - Submissions < 24 hours late incur a penalty of 10% of available points.
 - Submissions < 48 hours late incur a penalty of 30% of available points.
 - Submissions more than 48 hours late will receive no credit, and we will not provide written feedback.

Assignments

2022 Fall

[Home](#)
[Syllabus](#)
[Grades](#)
[Quizzes](#)
[Library Resources](#)
[Assignments](#)

Welcome to STA313: Data Visualization

What? This course is all about data visualization, the art and science of turning data into readable graphics and charts. You will learn the science behind effective visual communication of data.

Who? Meet the teaching team! You are the reason we are here. We look forward to learn together through curiosity, joy, dedication, and support, and can't wait to see you grow through this journey in the data visualization world!



Prof. Fanny Chevalier Instructor	Book Sadprasad MSc student in Computer Science	Caitlin Harrigan PhD student in Computer Science	Emma Kroell PhD student in Statistics	Karan Panday PhD student in Computer Science	Warren Park PhD student in Computer Science	Michael Moon PhD student in Statistics
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How? This course is taught using a "flipped classroom" approach. What does this mean? Well, instead of the more typical class where the lecture is presented in class by the instructor and then you do practice for homework, this class will have you watch the lecture for homework and then we will use class time for practice and inquiry. There are several advantages to this model, that I further discuss in [this page](#).

Click on the "START HERE" button below for a module to orient yourself around this course. You must also read the course syllabus and policies, as well as the community agreement: quiz questions will test your knowledge of these.

 [START HERE:
Welcome!](#)

 [Syllabus & Course Policies](#)

 [Community Agreement](#)

LESSONS & ASSIGNMENTS

 [Schedule & Materials](#)

 [Quizzes](#)

 [Assignments](#)

GETTING HELP

 [Piazza](#)

 [Contact us](#)

 [Accommodation request](#)

 [Assignments](#)

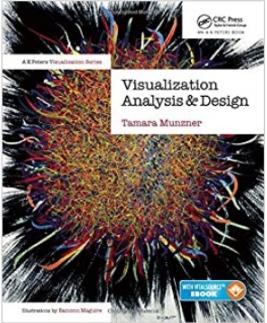
Academic Integrity

- You are responsible for knowing the content of the [University of Toronto's Code of Behaviour on Academic Matters.](#)
- As a general rule, we encourage you to discuss course material with each other and ask others for advice. However, it is not permitted to share complete solutions or to directly share code for anything that is to be handed in. When an assignment is required to be completed as a team, you may share solutions and code with other members of your team, but not with another team in the class. For example, “For question 2.1 what R function did you use?” is a fair question; “Please show me your R code for question 2.1” is not.
- If you have any questions about what is or is not permitted in this course, please do not hesitate to contact [the Professor](#) via the course email

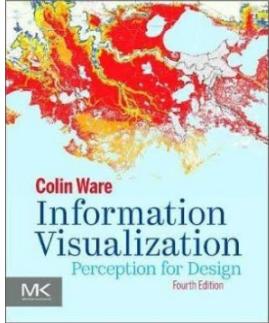
Resources

Useful Resources

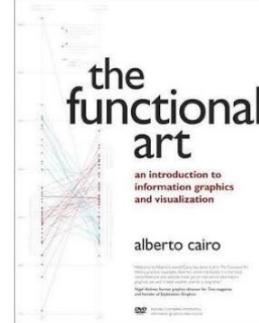
Visualization Books



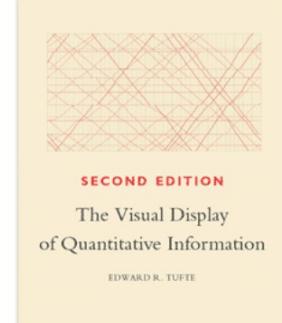
Visualization Analysis & Design
by Tamara Munzner



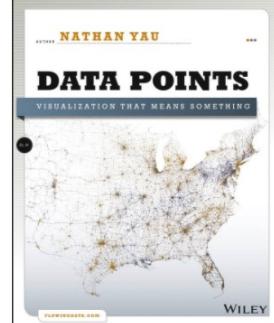
Information Visualization
Perception for Design
by Colin Ware



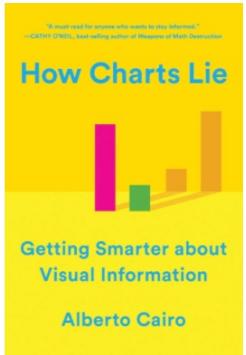
The Functional Art
an introduction to information graphics and visualization
by Alberto Cairo



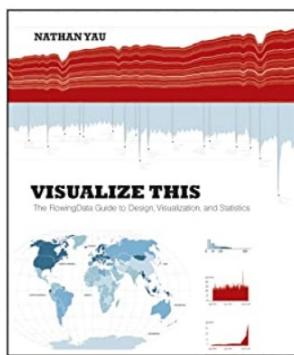
The Visual Display of
Quantitative Information
by Edward Tufte



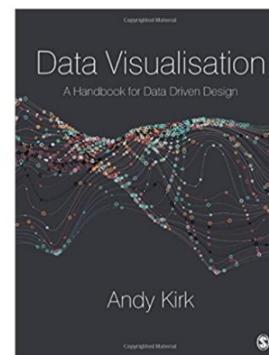
Data Points
Visualization that Means Something
by Nathan Yau



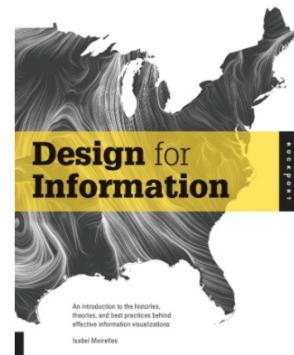
How Charts Lie
Getting Smarter about Visual Information
by Alberto Cairo



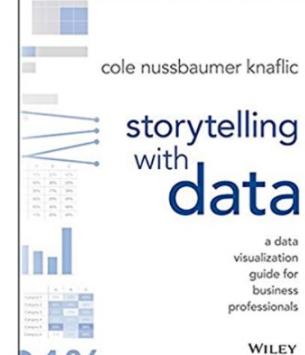
Visualize This
The FlowingData Guide to Design,
Visualization, and Statistics
by Nathan Yau



Data Visualization
A Handbook for Data Driven Design
by Andy Kirk



Design For Information
by Isabel Meirelles



Storytelling with data
A data visualization guide for
business professionals
by Cole Nussbaumer Knaflic

A portrait of a woman with long brown hair and glasses, smiling at the camera. She is wearing a dark-colored top.

I'm looking forward to
seeing you in class!