NYU | STERN

Visualizing Data - Certificate

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Instructor

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The teaching fellow will monitor the discussion forums and be available for questions via email.

Course Description

This course is an introduction to the principles and techniques for visualizing data. This course shows you how to better understand your data, present clear evidence of your findings to your intended audience, and tell engaging data stories that clearly depict the points you want to make all through data graphics.

You will learn visual representation methods and techniques that increase the understanding of complex data and models. Emphasis is placed on the identification of patterns, trends and differences from data sets across categories, space, and time.

The ways that humans process and encode visual and textual information will be discussed in relation to selecting the appropriate method for the display of quantitative and qualitative data. Graphical methods for specialized data types (times series, categorical, etc.) are presented. Topics include charts, tables, graphics, effective presentations, multimedia content, animation, and dashboard design.

Throughout the course, several questions will drive the design of data visualizations. These include: Who's the audience? What's the data? What's the task? What's the best visual display?

This is a hands-on course. **In this course, we will focus on Tableau and Excel to create, edit, alter, and display your data graphics.**

Learning Objectives

I. Data formatting and analysis for data graphics: Use visual data exploration methods that aid in data understanding. Learn techniques for data preparation including data formatting and cleaning. Identify the target audience and the line of inquiry.

II. Creation of data graphics: Identify appropriate data visualization techniques given particular requirements imposed by the data together with the driving questions. Build data graphics with the appropriate data visualization and analytics software for the task at hand.

III. Refinement of data graphics: Refine the data graphics to improve readability, clarity, and accessibility of the data insights. Highlight and annotate to aid in the interpretation of the data.

IV. Presentation with data graphics: Tell stories with data graphics that will resonate with the audience. Visually communicate the key takeaways.

V. Data visualization case studies and examples: See how data graphics are used in practice through case studies showcasing a unique approach to using data graphics in different settings.

Required Readings & Materials

Sosulski, K. (2019). Data Visualization Made Simple: Insights into Becoming Visual. New York: Routledge.

Sosulski, K. (2018). Data Visualization Made Simple: The Practice of Becoming Visual. Select labs are linked to the lessons on NYU Classes

In addition to the required readings, expect to frequently reference the documentation from Tableau.

Required software

The major graphics tools we will be using in this course for creating visualizations are Excel and Tableau. You must have a computer that allows you to install additional software (you should have administrator access to your computer).

- Microsoft Excel, PowerPoint (Mac users are encouraged to use KeyNote), and a basic text editor such as Notepad or TextEdit.
- Tableau Desktop.
  - Download the latest version of Tableau Desktop from https://www.tableau.com/tft/activation
  - Click on the link above and select Get Started. On the form, enter your email address for Business E-mail and enter the name of your school for Organization.
  - Activate with your product key: **TBA**
  - Already have a copy of Tableau Desktop installed? Update your license in the application: Help menu -> Manage Product Keys
- Geocodio: An online geocoder. Register for free at: https://www.geocod.io/

Online Meetings

To assist in your learning of data visualization there are **8 optional scheduled working sessions via GoToTraining Web Conference.** These sessions will provide demonstrations and will be designed around your needs and questions.

Review the dates and times and sign up at:
https://attendee.gototraining.com/rt/6121255404623572993

Course Requirements & Grading

Requirement	% of your grade
Lab exercises (12)	25%
Assignments (3)	75%

The grading will be based on the following criteria:

0 points	Little or no effort. Didn't follow directions.
10 – 50 points	Missing many of the key elements of the assignment.
51 – 80 points	Somewhat met the requirements. Missing key elements
81 – 90 points	Met the requirements.
91-100 points	Above and beyond. You met the requirements of the exercise and went beyond what was expected.

This criteria is designed for you to not just complete the work, but to push yourself to go beyond by trying new techniques and approaches.

Assignments and lab exercises submitted after March 31, 2019 will not be accepted.

Course Outline

A suggested due date is provided for each lesson exercise / assignment.
This is designed to help you "pace" your work and receive incremental feedback on your progress.

Lesson	Topic	Reading, videos and tutorials	Deliverables	Suggested due date	Feedback given
Level I: Essentials (February 4 - 17)					
1	Introduction	Review lesson 1	Lab 1 - Primer Exercise 1.1.1	Feb. 17	Mar. 4
Feb. 5	Online meeting @ 8pm EST				
2	Graphics + data	Review lesson 2	Lab 1 - Primer Exercise 1.1.3	Feb. 17	Mar. 4
Feb. 12	Online meeting @ 8pm EST				
3	Design + audience	Review lesson 3	Lab 1 - Primer Exercise 1.1.4	Feb. 17	Mar. 4
Level II: Visualizing comparisons (February 18 - March 3)					
4	Categorical data graphics	Review lesson 4	Lab 2 - Categorical Exercises 2.1.1 and 2.2.1	Mar. 3	Mar. 11
5	Categorical data types	Review lesson 5	Lab 2 - Categorical Exercises 2.2.2 and 2.3.1 Assignment 1 - Part A	Mar. 3	Mar. 11
Feb. 19	Online meeting @ 8pm EST				
6	Design principles for categorical data graphics	Review lesson 6	Lab 2 - Categorical Exercise 2.4.1 Assignment 1 - Part B	Mar. 3	Mar. 11
Feb. 26	Online meeting @ 8pm EST				
7	Pitch: The report	Review lesson 7	Assignment 1 - Part C	Mar. 3	Mar. 11
Level III: Visualizing locations (March 4 - 17)					
8	Geospatial data graphics	Review lesson 8	Lab 3 - Geospatial Exercise 3.1.1	Mar. 17	Mar. 25
9	Geospatial data types	Review lesson 9	Lab 3 - Geospatial Exercise 3.5.1 Assignment 2 - Part A	Mar. 17	Mar. 25
Mar. 5	Online meeting @ 8pm EST				

10	Design principles for geospatial data graphics	Review lesson 10	Lab 3 - Geospatial Exercise 3.4.1 Assignment 2 - Part B	Mar. 17	Mar. 25
Mar.12	Online meeting @ 8pm EST				
11	Pitch: Web dashboard	Review lesson 11	Assignment 2 - Part C	Mar. 17	Mar. 25
Level IV: Visualizing time (March 18 - 31)					
12	Temporal data graphics	Review lesson 12	Lab 4 - Time Exercise 4.1.3	Mar. 31	Apr. 7
13	Temporal data types	Review lesson 13	Lab 4 - Time Exercise 4.2.1 Assignment 3 - Part A	Mar. 31	Apr. 7
Mar.19	Online meeting @ 8pm EST				
14	Design principles for temporal graphics	Review lesson 14	Lab 4 - Time Exercise 4.4.1 Assignment 3 - Part B	Mar. 31	Apr. 7
Mar. 26	Online meeting @ 8pm EST				
15	Pitch - The presentation	Review lesson 15	Assignment 3 - Part C	Mar. 31	Apr. 7