FSEM-101-A16: Displaying Data
From Ancient Maps to Computer Generated Visualization

M-W *Seminar/Lab* 12:30-1:50

Who:	Michael Gousie
Where:	Science Center 1325
When:	Mon 2:00-3:00; Tue 2:00-3:30; Wed 2:30-4:00
E-mail:	mgousie@wheatoncollege.edu
Web:	http://cs.wheatoncollege.edu/mgousie

Content:

Data, in its various forms, has been transformed into visual representations throughout history. Borders, cities, roads, and the like have been represented on ancient maps. Other visualizations, such as bar graphs and scatter plots, can show multiple data sets and their interactions. Now the computer can be used to not only generate a visualization, but also make it interactive so that the user can explore multidimensional data easily and efficiently. We will explore ways to display data, first on paper, and then via sophisticated visualizations on the Web. Students will create their own Web pages containing data visualizations using powerful software and programming techniques. (No experience is assumed.)

Required Texts:

Chiasson, Gregory, et. al. *Data + Design: A Simple Introduction to Preparing and Visualizing Information*. E-book available at `https://infoactive.co/data-design`. *(Link is on the course web page.)*

Cook. *The Best American Infographics 2013*. Mariner Books, 2013.

Tufte. *The Visual Display of Quantitative Information*. Graphics Press, 1983.

Tufte. *Envisioning Information*. Graphics Press, 1990.

Tufte. *Visual Explanations*. Graphics Press, 1997.

Tufte. *Beautiful Evidence*. Graphics Press, 2006.

All of the Tufte books are available on reserve at the library.

Goals:

In this seminar, there are several goals. These include, but are not limited to:

- sharpening your skills in collecting evidence
- thinking about and organizing data to support a hypothesis
- expressing yourself in multiple ways (e.g., hard copy paper vs. computer image)
- achieving new levels of computing competency

It is this last goal that we will spend much of our time on, in the context of infographics/information visualization. Along the way, you will do some presentations and short writing assignments.

Requirements:

There will be ample opportunity to score (and lose) points this semester:

Assignment	Topic	Weight
Proj 1	Basic Excel	5%
Proj 2	Excel with Big Data	8%
Proj 3	Piktochart	12%
Proj 4	Map Infographic	15%
Proj 5	Basic Python Graphics	10%
Proj 6	Interactive Infographic	20%
Several Writing Assignments	Various	15%
Presentations	Various	10%
Participation	In-class Discussions	5%
		100%

Grading:

Grades will be assigned according to the following scale:

A = 93-100, A- = 90-92, B+ = 87-89, B = 83-86, B- = 80-82, etc.

Course Policies:

- You are responsible for all material covered in class, including the reading (shown below).
- If you must miss a quiz or exam for any reason, you must inform me BEFORE the test. Except in the case of emergency, illness, or you got trapped in Wheaton's original pool[1], makeup exams will not be given.
- Assignment due dates are FIRM.
  - All computer projects must be submitted electronically by 11:59:59 PM on the due date unless otherwise noted. Projects submitted on the following day will receive a 15% penalty. Anything turned in later will receive a 0. Associated hard copy, if any, must be submitted the following day or as indicated in the project specifications.
  - Assignments that are written or printed must be handed in at the start of class on the due date. There are **no** provisions for turning in assignments late.
  - There will not be any individual "extra credit" work. If you did not have time to do a good job on the original assignment, how will you have time to do *additional* work?
- You are expected to adhere to the Honor Code.
  - Although *discussion* of projects or homework is encouraged, the final *implementation* of programs should be the result of your own work. Any copying of projects or homework is prohibited.
  - You will be required to write and sign the pledge on all work turned in: *I have abided by the Wheaton Honor Code in this work.*

[1] Do you know where this is?

  - Any violation of the above guidelines will result in a 0 for the assignment/project and/or a failing grade for the course.

- **The use of laptops or other computers/pads is not allowed during lecture.** Special arrangements can be made if necessary.
- During class time, computers in the classroom are to be used only for the current exercise/problem.
- The use of cell phones, iPods, iPads, iPhones, iPlops, iFlops, and other personal electronic devices is prohibited during class.
- Please, no eating during class.
- Please plan your restroom breaks so that you will not disrupt class[2].

Course Schedule (subject to change)**:**

Week #	Date	Topic(s)	Reading (Pages noted in class)
Week 1		**Introduction**	*Best American Infographics*
	Aug 27	Introduction to FYS and information visualization	
	Aug 29	*1:00-2:00 – Advising Team Meeting #3*	
Week 2		**Information Visualization**	*Data + Design*
	Sep 1	*No class: Labor Day*	
	Sep 3	Information visualization scavenger hunt	
	Sep 4	*Add/drop period ends*	
Week 3		**Color**	*Data + Design*
	Sep 8	Hexadecimal numbers & color	
	Sep 10	Basic design principles	
Week 4		**Excel I**	*Data + Design*
	Sep 15	So you think you know Excel?	
	Sep 16	Pizza with the President. 5:30-6:30	**Required event**
	Sep 17	More infographic design	*Best American Infographics*
Week 5		**Excel II**	
	Sep 22	Using **big** data	
	Sep 24	How to get your point across	*Data + Design*
Week 6		**Infographic Examples**	*The Visual Display...*
	Sep 29	Examples from Tufte	
	Oct 1	Student lightning talks	
Week 7		**Making Static Infographics**	Tufte books
	Oct 6	Piktochart basics	
	Oct 8	More Piktochart	
Week 8		**Piktochart Infographics**	Tufte books
	Oct 13-14	*No classes: October Break*	
	Oct 15	Student Presentations	
	Oct 17	*Last day to petition to drop a course with no record.*	
Week 9		**Interactive Maps**	
	Oct 20	MapBox and TileMill	
	Oct 20	Getting data	

[2]It's a sign of the times that I have to mention this.

Week 10		**Changing Gears**	Python readings TBD
	Oct 27-31	*Advising Week*	
	Oct 27	More TileMill	
	Oct 29	Introduction to Python	
Week 11		**Programming with Python**	
	Nov 3-7	*Course Selection Week*	
	Nov 3	Sequential statements	
	Nov 5	Input/output	
	Nov 7	*Last day to petition to drop a course with WD.*	
Week 12		**Python Graphics**	
	Nov 10	Graphics basics	
	Nov 12	Making a simple infographic	
Week 13		**More Python**	
	Nov 17	Selection: If-else	
	Nov 19	Practice	
Week 14		**Short Week**	
	Nov 24	Project development	
	Nov 26-28	*No classes: Thanksgiving Break*	*The Book of Turkey*
Week 15		**Finishing Touches**	
	Dec 1	Putting it all together	
	Dec 3	Project presentations	
	Dec 5	*Last day of classes*	
Week 16		**Final Exam Week**	
	Dec 8-13	Final Exams	