Syllabus for **Data Visualization Strategies**
Certificate in **Data Visualization**

(Course #148112, Program #5552/5553)

Downtown Seattle Location

1/12/2016 - 3/15/2016, Tuesdays, 6-9 PM

Instructor: **Tommy Unger**

tunger@uw.edu

Course Description:

> *Data visualization is the use of visual representations to explore, make sense of, and communicate data.* - Stephen Few
>
> *Design must reflect the practical and aesthetic in business but above all... good design must primarily serve people.* - Thomas J. Watson

Thanks to advances in computing, we now have the ability to collect, summarize and make visual representations of data in more powerful, scalable, and informative ways. While the technology to visualize has progressed, data has also grown exponentially. Not long ago, visualization was just a few unique, hand-drawn charts with hundreds of data points. Today, data visualizations are ubiquitous and can represent complex systems that include billions of data points. Although the data has grown, the use cases remain the same. Data visualizations help people make comparisons, view relationships, and see trends. Building on the foundational theories and best practices of visualization, this course will help you research, design and build visualizations. The goal of this course is to expose you to data preparation and exploration methods, along with techniques that allow you to create impactful and compelling visualizations of complex and varied data.

Program Website:

Course Canvas Page: https://canvas.uw.edu/courses/1026612

Course Description: http://www.pce.uw.edu/courses/data-visualization-strategies/downtown-seattle-winter-2016/

Course Learning Objectives:

At the conclusion of this course, students will be able to:

- Acquire and prepare data for analysis and visualization.
- Identify and understand the audience for your visualization.
- Understand the relationship between design, user experience, and visualization.
- Work with a variety of visualization tools.
- Leverage cloud based visualization solutions.
- Create persuasive data driven presentations.

Course Format:

The format for the course teaching will consist of the following:

- Lectures (including guest lectures)
- Readings
- In class projects
- Individual projects
- Group projects

Course Materials:
Optional: Yau, Nathan. Visualize This: The FlowingData Guide to Design, Visualization, and Statistics. Wiley, 2011.
Optional: Yau, Nathan. Data Points: Visualization That Means Something. Wiley, 2013.
Optional: Few, Stephen. Now you see it, Analytics Press, 2009.
Optional: Tufte, Edward. The Visual Display of Quantitative Information. Graphics Press, 2001.
Selected academic readings per topic.

Technical Requirements:

- Computer literacy, file management, and basic familiarity with web browsing required.
- Business experience may be helpful but not required.
- Database experience helpful and some experience dealing with extracts and files.
- Familiarity with Microsoft Excel.
- Experience with statistics, SQL and javascript is a plus, but not a requirement.

Course Topics:

- Data sourcing and preparation: data types, data preparation and transformation for analysis and reporting
- Data visualization solution design including understanding your audience, user experience, delivery strategy, mediums, platforms
- Gaining familiarity and experience with a variety of visualization tools.
- The cloud: visualization and usage of cloud-based solutions
- Roles and responsibilities for reporting and analysis including: planning for collaborative analysis, scientific & statistical analysis, business & financial analysis.
- *Course topics are subject to change based on instructor's discretion.*

Student Assessment:
Grading will be based on:

- Discussion and participation in class exercises: 30% of total grade
- Completion of homework assignments: 30%
- Final individual project: 30%
- Attendance: 10% (must attend at least 80% of the sessions to pass).

Group projects and in-class assignments will be evaluated by the instructor and fellow students. This course is Pass/Fail. No letter grade will be assigned. In order to pass, students need to attend 80% of the sessions and achieve a total score of 70% or above.

Policies and Values:
The syllabus contains the policies and expectations for the Data Visualization course. Please read the entire syllabus carefully before continuing in this course. These policies and expectations are intended to create a productive learning atmosphere for all students.

Throughout this course, discussion on the topics presented in the class is very much encouraged.

One of the primary goals of this course is to help inform your own values and perceptions with respect to different visualization techniques. The field of visualization is still a very active field of research and we will spend time becoming acquainted with some of the latest developments in field.

Students are expected to attend at least 80% of the class sessions and to remain in class for the duration of the session. Students in this course seeking accommodations to special needs should consult with the UW Disability Resources for Students team, http://depts.washington.edu/uwdrs/.

Course Topics and Assignments by Date:

Note that the exact week to week syllabus is subject to change, but the below represents the current plan. Depending on the required depth for each topic, the instructor reserves the right to modify the syllabus. It is the instructor's goal to ensure we cover all of the topics included below and to have exercises that will provide students with an opportunity to put into practice the material presented in lectures.

Week		
1	**Topics**	**Introduction to Data Visualization Strategies** **Review of *Data Visualization Theory: A Practical Introduction*** **A look at the top visualizations of 2015**
	Pre-reading	Best of 2015: Washington Post, Wall Street Journal, New York Times
	Exercise	Review of Data Visualization Theory: A Practical Introduction
	Assignment	Analyze visualizations from the best from 2015
2	**Topics**	**Understanding the audience for your visualization** **Finding data, internally and beyond**
3	**Topics**	**Data preparation fundamentals** **Quality of data, quality of visuals**
4	**Topics**	**Data profiling - understanding your data** **Exploration of data sets**
5	**Topics**	**Mashups: finding and combining data** **Visualizing mashups**
6	**Topics**	**Relational data: joining things together** **Data models: more than meets the eye**
7	**Topics**	**Big data - what does it really mean?** **The cloud services revolution**
8	**Topics**	**Design and user experience in computer visualizations** **Delivering visualization solutions**
9	**Topics**	**Exploration and explanation** **Visualization for everyone, from scientists to home buyers**
10	**Topics**	**Class Final Project Presentations**