Course Syllabus

Downloadable version:

USF Muma **College of Business** School of Information Systems and Management **UNIVERSITY** of **SOUTH FLORIDA**		Data Visualization for Story Telling - ISM 6419 Spring 2023

Instructor:	Han Reichgelt, PhD
Office	LPH 430 St Petersburg CIS 2071 Tampa
Office phone	727-873-4786
Fax	TBD
Email	reichgelt@usf.edu
Classroom	BSN 115
Time:	Thursdays 6:30 - 10:15
Office hours	**Mondays 10:00-12:00 pm** (https://teams.microsoft.com/l/meetup-join/19%3ameeting_ODRhYzE2OGQtMzIlZC00MWQ2LTkxZDYtOTAzN2UzMjdmZTkx%40thread.v context=%7b%22Tid%22%3a%22741bf7de-e2e5-46df-8d67-82607df9deaa%22%2c%22Oid%22%3a%221b3ef0f3-b0ad-44bd-8a43-d3804d2e3d10%22%7d) (via Teams) **Mondays 6:00-8:00** (https://teams.microsoft.com/l/meetup-join/19%3ameeting_NWI4ZGUzNjItZmUwNS00MmEzLWIyOGMtOTU0YjhIMWRiZWRh%40thread.v context=%7b%22Tid%22%3a%22741bf7de-e2e5-46df-8d67-82607df9deaa%22%2c%22Oid%22%3a%221b3ef0f3-b0ad-44bd-8a43-d3804d2e3d10%22%7d) pm Teams) **Wednesdays 2:30-6:00 pm** (https://teams.microsoft.com/l/meetup-join/19%3ameeting_OTg2NWU0ZWYtNTdINS00OGRmLWE3ODEtYzg3MzRkNWJkYjFk%40thread context=%7b%22Tid%22%3a%22741bf7de-e2e5-46df-8d67-82607df9deaa%22%2c%22Oid%22%3a%221b3ef0f3-b0ad-44bd-8a43-d3804d2e3d10%22%7d) (in person at CIS 2071 or via Teams). Also available at other times by appointment

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Course Description:

As organizations gather and access more and more data, the issue of knowledge management in general and business intelligence and data analytics in particular takes on an increasing importance for organizational success. However, while the various business intelligence tools often offer important information, in order for such information to be useful from an organizational point of view, it needs to be presented in a way that is accessible. Data/Information visualization is widely used in several industries, including business, engineering, and media disciplines to help people analyze and understand what the data is telling us. The visualization field has grown exponentially over the last few years, and thus there are more tools available to help us quickly and efficiently create compelling ways to understand data.

This course examines how to present insights gained through the application of business intelligence techniques in the most effective way to tell stories that can improve the quality of leadership decisions.

Course Objectives:

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

1. Discuss the importance of data visualization in improving data-driven organizational decision-making.
2. Distinguish between truthful visualizations and misleading visualizations, and discuss what makes a visualization truthful or misleading.
3. Use data visualization tools to produce quality visualizations.
4. Create visualizations in at least one programming language.
5. Use widely used data visualization tools to clearly, effectively and compellingly communicate insights to improve organizational decision making.

Course Material

Required:

   NONE

Optional:

   Healy, K. (2019) *Data Visualization: A Practical Introduction.* Princeton, NJ: Princeton University Press

   Henley, A.J. & Wold, D. (2018) *Learn Data Analysis with Python: Lesson in Coding* . Apress. (An electronic version of the book is included in module 7)

   Milligan, J. (2016) *Learning Tableau 10 (2nd Edition)*. Packt Publishing (Electronic copy available from USF library)

Nussbaumer Knaflic, C. (2015) *Story Telling with Data*. Wiley

Where appropriate, we will also include links to additional optional material online.

We will of course rely heavily on Canvas. The Canvas privacy policy is at **https://www.canvaslms.com/policies/privacy** **(https://www.canvaslms.com/policies/privacy)** .

Grading:

You will be assessed using a number of different assessment tools, including

- A number of smaller projects.
- A few graded discussions. The graded discussions require you to make an initial contribution and to post at least two meaningful reactions to posts from your class mates. The initial contributions are always due on the Thursday before the posted deadline. This will give your class mates time to read your contribution and post a thoughtful reaction.
- The larger project in which you will conduct data analysis and data visualization on a data set, preferably of your own choosing, and
- A reflective essay on what you learned in the course and how you could use the competencies acquired in the course in your professional career.

The link of most of the assessments to the course objectives will be clear. The only assessment instrument that needs justification is the reflective essay. Research (see e.g. **http://www.cmu.edu/teaching/principles/learning.html** ⬈ **(http://www.cmu.edu/teaching/principles/learning.html)**) has shown that learning improves considerably, especially for adult students, if students reflect on their learning and how they could use the competencies and knowledge that they acquired in a course through their own careers. There will be more details on what to include in the essay later on in the course.

Since the project is such a large part of the overall grade for the course, you are welcome to submit an early draft of the project, and there will be a number of graded discussions in which you are asked to report on the progress of your project and on any issues you are running into. The project will consist of a written report and a number of visualizations in whatever tool you choose (Tableau or PowerBI).

Your grade will be determined as follows:

Assessment	total
Mini projects	320
Small Graded Discussions	60
Large Graded Discussion	80
Reflective essay	30
Project Presentation	30
Final Project	200

Total	720

Your raw numerical grade will be converted to a letter grade according to the following table:

A+	>= 96.5%	<= 100%
A	>= 93%	< 96.5%
A-	>= 90%	< 93%
B+	>= 86.5%	< 90%
B	>= 83%	< 86.5%
B-	>= 80%	< 83%
C+	>= 76.5%	< 80%
C	>= 73%	< 76.5%
C-	>= 70%	< 73%
D+	>= 66.5%	< 70%
D	>= 63%	< 66.5%
D-	>= 60%	< 63%
F		< 60%

(https://usflearn.instructure.com/courses/1585264/files/117703528/download?wrap=1)

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Provisional Schedule

Week	Date	Topics	Assessments	Deadline
1	Feb 6	Introduction Discussion of Syllabus Good and Misleading Visualizations Installing the Required Technologies	Discussion on Misleading and Truthful visualizations	Feb 12 (Syllabus) Feb 14 (Viz Discussions)
2	Feb 13	Telling Stories with Data The Tableau Interface	Discussion on Initial Project Ideas Some simple Tableau Visualizations Tableau Exercise 1	Feb 21
3	Feb 20	Data Visualization and Visual Impairment Data Preparation in Tableau Prep Builder	Tableau Exercise 2	Feb 28
			Discussion on Data

4	Feb 27	Filters and Maps in Tableau Combining and Animating Visualizations in Tableau Publishing to Tableau online	Visualization and Visual Impairment Tableau Exercise 3	Mar 7
5	Mar 6	Power BI 1	Project Progress Discussion 1 Power BI Exercise 1	Mar 22
Mar 12 - Mar 17: SPRING BREAK				
6	Mar 20	Power BI 2	Power BI Exercise 2	Mar 29
7	Mar 27	Qlik Sense	Qlik Sense Exercise	April 5
8	April 3	Data Visualization in Python	Python Exercise	April 12
9	April 10	Data Visualization in R	R Exercise Project Progress Discussion 2	April 19
10	April 17	Project	Project report, including visualizations Reflection Paper	May 4

Important dates:

- Mar 13 - Mar 19: Spring Break
- Mar 25: Last day to withdraw: No refund and no academic penalty.

Course Policies

Contacting the Instructor:
The easiest way to contact me is through CANVAS. I typically log in at least once a day, and often more frequently, and this includes weekends. You can also reach me by email as reichgelt@usf.edu or on my mobile 678-314-4432. I will normally answer you within 24 hours and often more quickly, unless I have indicated through a course announcement that I may not be able to. If you want to meet me in person, please make an appointment. I realize that some of you will be working full-time and that it will not always be convenient for you to meet during regular office hours, or in my office, and we can therefore be flexible both regarding time and place.

Communications from the Instructor:
I will in general communicate with you through course emails and course announcements, and it is therefore crucial that you log in at least twice a week to make sure that there are no new messages from me. I will also communicate with you by leaving comments on the various assignments that you

complete. It is important that you read these even if you earned the maximum grade on the assignment because I often make some comments on how you could further improve the assignment.

Deadlines:

I will strictly enforce deadlines and will typically not grade work if it is submitted after the deadline. Since the technology is still not 100% reliable, I would encourage you not to wait until the last moment before you start working on your assignments. Also, as you are working, please save your work often, preferably both on your computer and on some back-up storage device, such as a USB drive. In return, you can expect me to grade your work within 48 hours for the larger assignments and more quickly for the smaller assignments.

University Policies:

USF has a set of central policies related to student recording class sessions, academic integrity and grievances, student accessibility services, academic disruption, religious observances, academic continuity, food insecurity, and sexual harassment that **apply to all courses at USF**. Be sure to review these online at: **https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx** ⮕ **(https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx)**

Honor System:
Under the USF Honor System, each student is expected to observe complete honesty in all academic matters. Violation of the Honor System will be referred to the Honor Council. Note: The following are violations of the Honor Code: Copying another student's homework, signing another student's name on the attendance roster, copying another group's disk or written work, using another student's computer disk to print out your assignment, copying another student's file onto your disk, and misrepresenting a reason for a missed exam. Punishment for academic dishonesty may result in an automatic "F" or "FF" in the course or action that may result in suspension or expulsion. See the USF Policy on Academic Dishonesty & Disruption of the Academic Process at **http://www.usfsp.edu/catalog-grad/academic-integrity-of-students.htm** ⮕ **(http://www.usfsp.edu/catalog-grad/academic-integrity-of-students.htm)**

Students with Accessibility Issues:
Please notify your instructor by the second class meeting if you have a learning disability or require special assistance with this course. For additional information about academic accommodations and resources, you can visit the SAS website at **https://www.usf.edu/student-affairs/student-accessibility/** ⮕ **(https://www.usf.edu/student-affairs/student-accessibility/)**

We have made every effort to make the course material as accessible as possible. However, we rely heavily Canvas in this course. Consult **https://community.canvaslms.com/docs/DOC-2061 (https://community.canvaslms.com/docs/DOC-2061)** for the accessibility practices policies for Canvas. If you run into accessibility problems with either, please contact me.

S/U Grades:
This course cannot be taken on an S/U basis.

Title IX and Responsible Employees:

All USF faculty (adjunct, TA, etc) are designated Responsible Employees. If you have experienced

sexual harassment, sexual violence, relationship violence or stalking, Responsible Employees are here to listen and connect you to resources. When a disclosure is made to a Responsible Employee, they will notify the Title IX Office on your behalf and that office will send you an email with your rights, policies, and resources (if it is safe to do so). You are not obligated to respond to this email and The Title IX Office does not share information about the report unless requested by the discloser or as required to address imminent risk to members of our community.

Confidential Resources (listed below) are available and will not be required to notify the Title IX office of disclosures of sexual harassment. If you are not sure what to do, you are encouraged to contact Victim Advocacy to confidentially explore your options including: injunctions & protective orders; changes in accommodations, living arrangements, class schedules, & transportation; assistance with academic Issues-missed classes, late assignments, etc. The Title IX Office can also provide academic, on-campus housing and USF workplace accommodations, as well as other supportive measures.

Confidential Resources	Non-Confidential Resources
Victim Advocacy in the Wellness Center SLC 2200 727-873-4432 **https://www.stpetersburg.usf.edu/student-life/wellness/victim-advocacy-services/index.aspx** **(https://www.stpetersburg.usf.edu/student-life/wellness/victim-advocacy-services/index.aspx)**	Title IX 813-974-4373 **https://www.usf.edu/title-ix/** **(https://www.usf.edu/title-ix/)**
The Counseling Center promotes the wellbeing of the campus community by providing culturally sensitive counseling, consultation, prevention, and training that enhances student academic and personal success. Contact information is available at **https://www.usf.edu/student-affairs/counseling-center/about-us/contact-us.aspx** ⤷ **(https://www.usf.edu/student-affairs/counseling-center/about-us/contact-us.aspx)**	Student Outreach & Support PMB 101 727-873-4278 **https://www.stpetersburg.usf.edu/student-life/student-outreach-program/** **(https://www.stpetersburg.usf.edu/student-life/student-outreach-program/)**
Ombudsman Free, confidential conflict resolution PNM 105B 727-873-4184 **https://wwwtest.stpetersburg.usf.edu/resources/ombuds.aspx** **(https://wwwtest.stpetersburg.usf.edu/resources/ombuds.aspx)**	Student Conduct & Ethical Developm PNM 101B 727-873-4278 **Usfsp-conduct@usf.edu (mailto:Usf** **conduct@usf.edu)** **https://www.usf.edu/student-affairs/student-conduct-ethical-** **development/about-us/contacts.as** **(https://www.usf.edu/student-affairs/st** conduct-ethical-development/about-

conduct-ethical-development/about-us/contacts.aspx)

Student Health Services at the Wellness Center SLC 2200 727-873-4422 **https://www.stpetersburg.usf.edu/student-life/wellness/index.aspx** **(https://www.stpetersburg.usf.edu/student-life/wellness/index.aspx)**	Dean of Students PNM 101 727-873-4278 **https://www.stpetersburg.usf.edu/student-life/dean-of-students/** **(https://www.stpetersburg.usf.edu/student-life/dean-of-students/)**
OFF CAMPUS CONFIDENTIAL	OFF CAMPUS NONCONFIDENTIAL
Suncoast Center Rape Crisis Center 2188 58th St N Clearwater, FL 33760 727-388-1220 **https://www.suncoastcenter.org/sexual-assault-services** **(https://www.suncoastcenter.org/sexual-assault-services)**	Pinellas County Sheriff's Office 10750 Ulmerton Rd Largo, FL 33778 Nonemergency: 727-582-6200 Emergency: 911 **https://www.pcsoweb.com/** **(https://www.pcsoweb.com/)**
CASA Domestic Violence Shelter 1011 First Ave North St. Petersburg, FL 33705 24/7 Hotline: 727-895-4912 **https://www.casa-stpete.org/ (https://www.casa-stpete.org/)**	St. Petersburg Police Department 1301 First Ave North St. Petersburg, FL 33705 Nonemergency: 727-893-7780 Emergency: 911 **https://police.stpete.org/** **(https://police.stpete.org/)**

Course Summary:

Date	Details	Due
Sun Feb 12, 2023	🗩 **Syllabus** **(https://usflearn.instructure.com/courses/1791898/assignments/13709197)**	due by 11:59pm
Tue Feb 14, 2023	🗩 **Good Visualization** **(https://usflearn.instructure.com/courses/1791898/assignments/13709195)**	due by 11:59pm
	🗩 **Misleading Visualization** **(https://usflearn.instructure.com/courses/1791898/assignments/13709193)**	due by 11:59pm

Date	Details	Due
	🗨 **Initial Project Ideas** **(https://usflearn.instructure.com/courses/1791898/assignments/13717551)**	due by 11:59pm
Tue Feb 21, 2023	🚀 **Tableau Exercise 1 Part 2** **(https://usflearn.instructure.com/courses/1791898/assignments/13717549)**	due by 11:59pm
	📝 **Tableau Exercise 1 Part 1** **(https://usflearn.instructure.com/courses/1791898/assignments/13717559)**	due by 11:59pm
Wed Apr 26, 2023	📝 **Draft Final Report** **(https://usflearn.instructure.com/courses/1791898/assignments/13717553)**	due by 11:59pm
	📝 **Final Project** **(https://usflearn.instructure.com/courses/1791898/assignments/13717555)**	due by 11:59pm
Thu May 4, 2023	🗨 **Project Presentation** **(https://usflearn.instructure.com/courses/1791898/assignments/13719783)**	due by 11:59pm
	📝 **Reflection Paper** **(https://usflearn.instructure.com/courses/1791898/assignments/13717557)**	due by 11:59pm