Course Syllabus

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	ISM 6419
No content. Not visible to students **USF**Muma **College of Business** School of Information Systems and Management UNIVERSITY of SOUTH FLORIDA	Data Visualization Fall 2023 BAIS Students

Instructor:	Han Reichgelt, PhD
Office	LPH 430 St Petersburg CIS 2071 Tampa
Office phone	727-873-4786 678-314-4432 (preferred)
Email	reichgelt@usf.edu
Classroom	BSN 2304
Time:	Wednesdays 6:30-10:15
Office hours	**Mondays 10:00-12:00 pm** (https://teams.microsoft.com/l/meetup-join/19%3ameeting_ODRhYzE2OGQtMzIIZC00MWQ2LTkxZDYtOTAzN2UzMjdmZTkx%40thread.v 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 via Teams) **Mondays 6:00-8:00** (https://teams.microsoft.com/l/meetup-join/19%3ameeting_NWI4ZGUzNjltZmUwNS00MmEzLWIyOGMtOTU0YjhIMWRiZWRh%40thread. context=%7b%22Tid%22%3a%22741bf7de-e2e5-46df-8d67-82607df9deaa%22%2c%22Oid%22%3a%221b3ef0f3-b0ad-44bd-8a43-d3804d2e3d10%22%7d) pm Teams) **Thursdays 2:00-5:30** (https://teams.microsoft.com/l/meetup-join/19:meeting_MWQ1MTU1ZGItMDYyOC00ZjM0LWI4MGQtZGFjOWJjOWJiNmYx@thread.v2/0? context=%7B%22Tid%22:%22741bf7de-e2e5-46df-8d67-82607df9deaa%22,%22Oid%22:%221b3e b0ad-44bd-8a43-d3804d2e3d10%22%7D) (in person at CIS 2071 or via Teams). Also available at other times by appointment.

Course Catalog Description:

The course provides an overview of the data and information visualization discipline. Using a hands-on approach, readings and lectures will cover various visualizations principles and tools.

Expanded 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 the course)

- 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.
- Initial posts in discussion forums.
- Participation in Classroom discussions.
- 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.

Unless otherwise indicated, the deadline for all the assignments is Monday. This will give enough time to grade the assignments so that we discuss any general issues that arise from the assignment in class.

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 that you may be running into. The project will consist of a written report and several visualizations in whatever tool you choose (Tableau or Power BI). You will also be asked to make a project presentation, consisting of a 5-minute video.

Your grade will be determined as follows:

Assessment	Total
Mini projects	340

Posts in discussion forums	70
Participation in classroom discussions	60
Reflective essay	30
Project Presentation	30
Final Project	200
Total	**730**

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

A+	>= 96.5%	
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%

Provisional Schedule

Date	Topics	Assessments
Aug 23	M0 Getting Started M1 Introduction to Data Visualization	Syllabus Discussion Discussion on Misleading and Truthful visualizations
Aug 30	M2 Telling Stories with Data and a First Introduction to Tableau	Discussion on Initial Project Ideas Some simple Tableau Visualizations Tableau Exercise 1
Sep 6	M3 Data Preparation in Tableau	Tableau Exercise 2
Sep 13	M4 Combining Visualizations, Animations & Parameters in Tableau	Discussion on Data Visualization and Visual Impairment Tableau Exercise 3
Sep 20	M5 Power BI Part 1	Project Progress Discussion 1 Power BI Exercise 1
Sep 27	M6 Power BI Part 2	Power BI Exercise 2
Oct 4	M7 Cloud Based Data Visualization Tools	Qlik Exercise Google Looker Exercise
Oct 11	M8 Data Visualization in Python	Python Exercise
Oct 18	M9 Data Visualization in R	R Exercise Project Progress Discussion 2

Oct 25 - Nov 8	Project	Project report, including visualizations Project presentation Reflection Paper

Important dates:

- Sep 4, Labor Day, USF offices closed.
- Oct 28, 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 contact me during my office hours or make an appointment.

Communications from the Instructor:
In addition to communicating with you in class, 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.

Chatbots:
The course contains a few assignments that require you to create written documents. The use of chatbots to write these documents is not allowed in this course. If I have evidence that you used a chatbot, I will give you an F in the course and you will be reported for violating the academic integrity policy.

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 **https://www.usf.edu/graduate-studies/students/academic-integrity-of-students (https://www.usf.edu/graduate-studies/students/academic-integrity-of-students/)**

Students with Accessibility Issues:

Please notify your instructor by the second week 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.

Course Summary:

Date	Details	Due
	🗩 **Data Visualization and Visual Impairment in Oral Presentations** (https://usflearn.instructure.com/courses/1812328/assignments/14338993)	
	🗩 **Data Visualization and Visual Impairment in Written Presentations** (https://usflearn.instructure.com/courses/1812328/assignments/14339001)	
	🖋 **Draft Final Report** (https://usflearn.instructure.com/courses/1812328/assignments/14339005)	
	🖋 **Final Project** (https://usflearn.instructure.com/courses/1812328/assignments/14339007)	
	🗩 **Good Visualization** (https://usflearn.instructure.com/courses/1812328/assignments/14338999)	
	🗩 **Initial Project Ideas** (https://usflearn.instructure.com/courses/1812328/assignments/14338997)	
	🗩 **Misleading Visualization** (https://usflearn.instructure.com/courses/1812328/assignments/14338995)	
	🚀 **Power BI Exercise 1** (https://usflearn.instructure.com/courses/1812328/assignments/14338981)	
	🚀 **Power BI Exercise 2** (https://usflearn.instructure.com/courses/1812328/assignments/14338977)	
	🗩 **Project Presentation** (https://usflearn.instructure.com/courses/1812328/assignments/14338991)	
	🗩 **Project Progress Discussion 1** (https://usflearn.instructure.com/courses/1812328/assignments/14338987)	
	🗩 **Project Progress Discussion 2** (https://usflearn.instructure.com/courses/1812328/assignments/14338989)	
	🚀 **Python Exercise** (https://usflearn.instructure.com/courses/1812328/assignments/14338985)	

Date	Details	Due
	🚀 **Qlik Quiz** **(https://usflearn.instructure.com/courses/1812328/assignments/14338979)**	
	📝 **QUESTIONS Qlik Sense** **Exercise** **(https://usflearn.instructure.com/courses/1812328/assignments/14339009)**	
	🚀 **R Exercise** **(https://usflearn.instructure.com/courses/1812328/assignments/14338973)**	
	📝 **Reflection Paper** **(https://usflearn.instructure.com/courses/1812328/assignments/14339011)**	
	💬 **Syllabus Discussion** **(https://usflearn.instructure.com/courses/1812328/assignments/14339003)**	
	📝 **Tableau Exercise 1 Part 1** **(https://usflearn.instructure.com/courses/1812328/assignments/14339013)**	
	🚀 **Tableau Exercise 1 Part 2** **(https://usflearn.instructure.com/courses/1812328/assignments/14338983)**	
	🚀 **Tableau Exercise 2** **(https://usflearn.instructure.com/courses/1812328/assignments/14338975)**	
	🚀 **Tableau Exercise 3** **(https://usflearn.instructure.com/courses/1812328/assignments/14338971)**	