

# MGMT 3125 - Introduction to Data Visualization

School of Business | Business Analytics

Spring 2019 | Hybrid: Wednesday 6:00pm – 7:50pm, D-004



## Instructor information:

<b>Name</b>	John Sokol, Adjunct Professor of Business
<b>Email</b>	John.Sokol@stockton.edu
<b>Communication</b>	Email, Blackboard, or in person
<b>Office Hours</b>	Before or after Wednesday night lecture

## Course Description:

- Introduction to Data Visualization provides an overview of business analytics, including the process of business intelligence and dashboard design, principles of data visualization, and effectively communicating data stories. The course uses Excel, Tableau and R software.

## Required Textbook:

- **Storytelling with Data: A Data Visualization Guide for Business Professionals**, by Cole Nussbaumer Knaflic, 1st edition, WILEY. ISBN-13: 978- 1119002253.
  - [Amazon](#) (as of 1/6/2018)
    - Used: \$16.09 paperback
    - New: \$20.12 paperback
  - [Chegg](#) (as of 1/6/2018)
    - Rent: \$15.49 paperback, due May 31, 2019
- **Optional: Data Visualization: A Practical Introduction**, by Kieran Healy. ISBN-13: 978-0691181622
  - [Amazon](#) (as of 1/6/2019)
    - New: \$37.08 paperback

## Required Software:

- **Tableau**
  - Tableau Desktop 2018.3 is available to our class for free on the [Tableau website](#).
  - Download either Mac or Windows version; use activation code: **TCUZ-BADA-A730-7DE8-7774**
  - Tableau is the main tool to create data visualizations/dashboards. The goal is to apply the concepts learned in *Storytelling with Data* to build clean, simplistic, attention grabbing Tableau dashboards that provides immediate insight into the inner workings of the data.
  - Tableau will be taught during lecture and supplemented with 10 – 15 minute online tutorials on Blackboard.
- **Microsoft Excel**
  - Office 365 is available for free download on the GoStockton Portal.

- Excel is used primarily to look at your raw data, compute summary statistics, and inputting data. At the beginning of the course we will use Excel to create visualizations, but as the course progresses we will transition completely to Tableau and R for our visualization purposes.
- R
  - RStudio is available for free on the [RStudio website](#).
  - For the second half of the semester, I will teach introduction to data visualization using R. This is industry standard software for statisticians and data scientists; to command a basic understanding of R is a differentiating factor from competing business analysts in the job market.

### Learning Objectives:

- Introduction to Data Visualization is the first course with a comprehensive overview of the fundamental concepts and tools of business analytics for improving decision making and performance. This is a hands-on course that is designed to introduce both the principles of data visualization and industry standard data visualization software. Visualizations are graphical depictions of data that can improve comprehension, communication, and decision making. Students will learn visual representation methods and techniques that increase the understanding of complex data models. Emphasis is placed on the identification of patterns, trends and differences in various datasets. For software, Excel, Tableau and R are used to apply the abovementioned data visualization principles.
- At the end of this course, you will be able to:
  - Collect, clean, and process data.
  - Synthesize a research question.
  - Create compelling and interactive visualizations.
  - Convey ideas, provide insight into a problem or situation, and ultimately tell a great data visualization story that provides a viable answer to a research question.
- Essential Learning Outcomes
  - Adapting to Change
  - Communication Skills
  - Creativity and Innovation
  - Information Literacy and Research Skills
  - Program Competence

### Course Policies:

- Online and lecture attendance is **required**. You should be fully interacting with the course material online in a timely manner and engage in active participation during weekly lecture.
- The classroom is a learning community, with me as your guide and all of us as participants. As such, a community based on mutual respect requires expectations that I as a professor and you as a student should have of each other.
- You can expect me to do the following:
  - Prepare online and lecture materials for the class.
  - Post and respond online on time and be available by email to respond to your questions.

- Return tests and other assignments in a timely fashion.
- Be respectful and attentive when you communicate with me.
- Treat you with respect and impartiality.
- Tell you if I don't know the answer. I will make every effort to find out what the answer might be.
- Give you prior notice of any changes made in the syllabus, this includes announcing any changes in class and "flagging" new items on the electronic syllabus.
- Keep dates as described in the syllabus, although the subject material may be re-arranged. No new assignments or quizzes will be added.
- I expect you to do the following:
  - Trust my professional and professorial judgment on academic matters and grading.
  - Interact enthusiastically online and in the classroom.
  - Be prepared.
  - Turn in assignments on time and done in an appropriate manner. I reserve the right to deduct points or refuse to grade work that was turned in late or done inappropriately. This is done to be fair to those students who did their work in the agreed upon fashion (see 'late assignment policy' below).
  - Be respectful and attentive when I communicate with you.
  - Treat each other with respect.
  - Give me prior notice of events in your life that you believe may affect your academic performance.

#### **Late Submission Policy:**

- Deduct 33.33% of the total possible assignment score from the student's assignment grade each day after the due date until the assignment grade drops to 0.

#### **Communication:**

- We will be using the Blackboard Discussion Board for asking and answering questions as a class. Students are able to post questions anonymously. I want to establish an environment of collaborative help, which would not be possible if questions and concerns were only sent to my email inbox.
- If there is a private concern that is unfit for a public forum such as Blackboard, I will respond to email within 4 - 8 hours (unless there is an extreme circumstance).

## Evaluation:

The final course grade will be calculated with the following assessment categories:

Assessment	Percentage of Final Grade
Assignments (8 @ 3.75% each)	30%
Final Project	20%
Blackboard Quizzes (8 @ 2.5% each)	20%
Mid-Term Exam	15%
Discussion Board posts (8 @ 1.25% each)	10%
Lecture Participation	5%

According to the Stockton University bulletin regarding grades:

*“Grades represent the professional judgment of a faculty member on a student’s academic performance in a particular instructional experience. A grade of A symbolizes excellent work, grades in the B range symbolize good work, grades of C+ and C symbolize satisfactory work, grades of C- and in the D range symbolize poor work, and an F symbolizes failure.”*

The grading scale will depend on my assessment of the graded material difficulty and an evaluation of the class grade distribution, but will typically conform to the usual 100-90, 89-80, 79-70, 69-60 ranges for the A, B, C and D grades, respectively.

Assignments:

- For Tableau assignments, please ensure you are submitting Tableau **packaged** workbook submissions. Several assignments will require a half page to one full page write up about applying the concepts learned in the Storytelling with Data textbook to your Tableau visualizations.

Blackboard Quizzes:

- Weekly blackboard quizzes (mix of multiple choice, fill in the blanks, true/false, and short answer response) of the weekly Storytelling with Data chapter readings and the weekly assignment content.
- Each quiz has an arbitrary number of questions based on the content of the week, but the typical quiz will contain between 10 – 20 questions.

Discussion Board:

- An original response on your thoughts about the weekly chapter readings unless another topic is specified in class or on Blackboard. An original response should be a minimum of 200 words and exhibits critical thought regarding the topic. Original responses will be graded on a 10-point scale with 10 points indicating excellent, 9 indicating good, 8 indicating satisfactory, 7 indicating poor and 0 indicating failure. Responses are not just summarizing the reading but your original opinion. I already read the book/chapters; I’m interested in hearing your thoughts about it and how you can apply the concepts in the textbook to the assignments.

### Mid-Term: 3/6/2018

- The mid-term exam will be administered in person on 3/6/2019, and assess chapters 1 – 6 in Storytelling with Data and all Tableau content. Exam structure is TBD.

### Final Project: Due 5/1/2018

- Answer a thorough, well thought out research question with a dataset of your choosing by building an interactive Tableau dashboard and a static R visualization, conveying a cohesive data story via classroom presentation and research paper style write up.
  - [Google Dataset Search](#) is a useful tool to find datasets on a topic you find interesting.
  - Must incorporate data visualization textbook concepts into the Tableau dashboard and R visualization.
- Present your Tableau dashboard and R to the class on 4/24 or 5/1
- Submit packaged Tableau workbook, PDF of R visualization, and write up to Blackboard
- \*\* The above items are subject to change based on course progression. \*\*

### Academic Dishonesty:

- Collaboration is important part of learning. However, your written work, such as discussion board posts, assignments, and final project must be your own original work. Quizzes may NOT be taken together, only individually. Quizzes taken together will result in a grade of 0 for all students involved. Handing in someone else work as your own is also cheating. Plagiarism will result in a grade of zero for the graded work. Review the university's academic honesty policy available on the Academic Affairs website. All incidents of academic dishonesty will be reported to the Office of the Provost as required by university policy.

### Disability Services:

- Students with disabilities who may require disability related accommodations for this course are encouraged to consult with Stockton University's Learning Access Program, located in J-204. Students can also call 652-4988. Additional information may be obtained from the [Learning Access Program Stockton webpage](#).

### Confidential Resources

- WGSC Hotline: 609-849-8473
- Counseling Center: 609-652-4722
- Avanzar: 1-800-286-4184
- Avanzar ([www.avanzarnow.org](http://www.avanzarnow.org)) is the county domestic violence/sexual assault program.

### Non-Confidential Resources

- Stockton Police: 609-652-4390
- Student Rights and Responsibilities: 609-626-3585
- Title IX Coordinator, Valerie Hayes: 609-652-4693

### Data Science & Strategic Analytics Program:

- Self-standing master's program (30 credits, can be completed in one full calendar year full time).

- [Promotional video](#) that explains ‘what is data science?’ and the opportunities the degree can provide.
- [Stockton webpage](#) for more information.
- If you have questions or are considering applying for the Fall 2019 cohort, feel free to reach out to me.

### Tentative Course Schedule (subject to change):

Week	Start Date	Storytelling with Data Readings and Content	Items Due
1	1/20	<ul style="list-style-type: none"> <li>• Chapter 1 - The importance of context</li> <li>• Visualizations in Excel</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 1, quiz 1, due 1/29 @ 11:59pm</li> </ul>
2	1/27	<ul style="list-style-type: none"> <li>• Chapter 2 – Choose an effective visual</li> <li>• Introduction to Tableau</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 2, quiz 2, discussion board 1 due 2/5</li> </ul>
3	2/3	<ul style="list-style-type: none"> <li>• Chapter 3 - Clutter is your enemy!</li> <li>• Tableau Line and bar graphs</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 3, quiz 3, discussion board 2, due 2/12</li> </ul>
4	2/10	<ul style="list-style-type: none"> <li>• Chapter 4 - Focus your audience’s attention</li> <li>• Calculated fields and parameters</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 4, quiz 4, discussion board 3, due 2/19</li> </ul>
5	2/17	<ul style="list-style-type: none"> <li>• Chapter 5 - Think like a designer</li> <li>• Dashboard design and Tableau stories</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 5, quiz 5, discussion board 4, due 2/26</li> </ul>
6	2/24	<ul style="list-style-type: none"> <li>• Chapter 6 - Dissecting model visuals</li> <li>• Tableau text tables and formatting</li> <li>• Mid-term exam review</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 6, quiz 6, discussion board 5, due 3/5</li> </ul>
7	3/3	Mid-term exam on 3/6	
8	3/10	Spring break	
9	3/17	<ul style="list-style-type: none"> <li>• Chapter 7 - Lessons in storytelling</li> <li>• Communicating data stories</li> </ul>	<ul style="list-style-type: none"> <li>• Quiz 7, discussion board 6 due 3/26</li> </ul>
10	3/24	<ul style="list-style-type: none"> <li>• Chapter 8 - Pulling it all together</li> <li>• Introduction to RStudio</li> </ul>	<ul style="list-style-type: none"> <li>• Quiz 8, discussion board 7, due 4/2</li> </ul>
11	3/31	<ul style="list-style-type: none"> <li>• Chapter 9 - Case studies</li> <li>• Chapter 10 – Final thoughts</li> <li>• ggplot line, bar graphs, Tidyverse</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 7, discussion board 8, due 4/9</li> </ul>
12	4/7	<ul style="list-style-type: none"> <li>• ggplot line, bar graphs, Tidyverse</li> <li>• ** Deadline to withdraw 4/4 **</li> </ul>	<ul style="list-style-type: none"> <li>• Assignment 8 due 4/16</li> <li>• Final project due 5/1 @ 11:59pm</li> </ul>
13	4/14	<ul style="list-style-type: none"> <li>• Upload dashboard to Tableau Public</li> <li>• Work on final project</li> </ul>	<ul style="list-style-type: none"> <li>• Final project due 5/1</li> </ul>
14	4/21	<ul style="list-style-type: none"> <li>• Project Presentations on 4/24</li> <li>• Work on final project</li> </ul>	<ul style="list-style-type: none"> <li>• Final project due 5/1</li> </ul>
15	4/28	<ul style="list-style-type: none"> <li>• Project Presentations on 5/1</li> <li>• Work on final project</li> </ul>	<ul style="list-style-type: none"> <li>• Final project due 5/1</li> </ul>

