Data Visualization Syllabus

Course Information

Course Number/Section	MIS 6380.003
Course Title	Data Visualization
Term	Spring 2020

Professor Contact Information

Professor	Dr. Judd D. Bradbury
Office Phone	972-883-4873
Mail Contact	e-Learning Course Messages (first priority)
Office Location	JSOM 3.220
Office Hours	Wednesday 3:00 – 4:00 PM

Course Description

This course is designed to provide students with an understanding of data visualization within the context of data science. The Data Visualization course will be exploring a number of non-traditional techniques for teaching the concepts and skills required as a data science professional working in data visualization. The course is technically demanding requiring programming and quick assimilation of a large number of tools. Please understand that in order to effectively learn the concepts and approaches in this course, you will need to work very hard for long hours every week. If you like to wait until the day before your assignments are due to begin your work, you should drop this course. If you are up for this personal responsibility, please join us!

Student Learning Objectives

1. Provide students with an understanding of the principles of descriptive and exploratory data visualization.
2. Provide students will visual tools for solving business problems.
3. Provide students with the ability to compose data stories for effective corporate communication of analytical insights.

Student Learning Outcomes

1. Students will be able to acquire, parse, and manipulate data sets
2. Students will be able to create publishing quality data visualizations from base data sets
3. Students will be able to use exploratory data visualization as an analytical tool for business
4. Students will be able to compose data narratives using data visuaizations

Required Textbooks

The following textbooks are available electronically for free in the UT Dallas Library. Click on the link below and search for the title.

http://www.utdallas.edu/library/

Visualization Analysis and Design – Tamara Munzner
Design for Information – Isabel Meirelles

Required Materials

Registration with Polleverywhere.com

Microsoft Excel for **Windows** must be used to complete the **Power BI** and **ARCGIS** assignments. Students using a laptop running OSX may wish to install a PC emulator.

Course Policies
A solemn duty will be upheld by your professor to maintain a level playing field for all students.

- **Assignments are due at midnight on the due dates defined in the syllabus**
- **Assignments must be submitted through e-learning**
- **Do not use the Microsoft Edge browser for submissions as it will damage documents**
- **Students are provided only one submission attempt per assignment**
- **Late assignments receive a 25% discount more than 7 calendar days late is a 0/100**
- **Completing assignments is 100% a student responsibility, we help, we do not tutor**
- **Interim quizzes will be provided to ensure students study the material each week**
- **Students are required to attend every class, speak, and monitor e-learning daily**
- **Missed exams will be provided with a 0/100**
- **We do not provide extra credit assignments**
- **A signed note from a medical doctor will be required for any grading impacted policy**
- **Colds, headaches, upset stomach and/or flu are not acceptable excuses for missing class or deliverables**
- **Students will receive the grades they earn, requests to change grades will be deleted**
- **We will only discuss grade calculation errors, we will not discuss your grade preference**

Communication
This course utilizes online tools for interaction and communication. For more details, please visit the eLearning Tutorials webpage http://www.utdallas.edu/elearning/students/eLearningTutorialsStudents.html for video demonstrations on eLearning tools.

- **Instructor will communicate with announcements and discussion board postings**
- **Communication sequence is:**
    1. **Discussion board posting**
    2. **Attend optional lab**
    3. **Course message to professor (If no response to discussion board in 24 hours)**
- **Individual concerns or questions should be sent in a course message**
- **Professor and teaching assistants are off duty on weekends**
- **Discussion board postings should always include:**
    1. **Exercise and step number**
    2. **Description of the last step that worked**
    3. **Screen shot of the error**
- **Discussion board postings are not markers that can be placed on the professor**
- **Blanket e-mails or lobbying your classmates is inappropriate student conduct**
- **Discussion board posts regarding course policies and/or answers will be deleted**

Technical Requirements
In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements http://www.utdallas.edu/elearning/students/getting-started.html#techreqs on the Getting Started with eLearning webpage http://www.utdallas.edu/elearning/students/getting-started.html.

Technical Specifications (Recommended)

RAM - 8GB
Processor - Intel i5 2.4 Ghz (minimum)
Graphics Processor - 512 MB (Dedicated)

Course Access and Navigation
The course can be accessed using the UT Dallas NetID account at: https://elearning.utdallas.edu. Please see the course access and navigation http://www.utdallas.edu/elearning/students/getting-started.html#courseaccessandnav section of the site for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials http://www.utdallas.edu/elearning/students/eLearningTutorialsStudents.html.
UT Dallas provides eLearning technical support 24 hours a day/7 days a week. The eLearning Support Center http://www.utdallas.edu/elearninghelp services include a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Distance Learning Student Resources
Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the eLearning Current Students page http://www.utdallas.edu/elearning/students/cstudents.htm for details.

Server Unavailability or Other Technical Difficulties
The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk http://www.utdallas.edu/elearninghelp. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Assignments & Academic Calendar

WEEK BEGIN	TOPIC/LECTURE	READING	ASSESSMENT / ACTIVITY	EXERCISE DUE DATE

1 1/13	Descriptive Data Visualization	**Graphics and graphic information processing, p. 1-15, 186-197 & 213-230 – Jacques Bertin. Class Policy Test.**	**Exercise 1 – Data Measurement** **Class policy test**	**1/17**
2 1/20	Visualization in Tableau	**Visualization Analysis & Design, Chapter 2 p. 21-40 - Tamara Munzner.**	**Exercise 2 - Building a Visualization Worksheet in Tableau**	**1/24**
3 1/27	Data Manipulation & Process for Data Visualization	**Visualization Analysis & Design, Chapter 3 p. 43-58, Chapter 4 p. 67-74 - Tamara Munzner.**	**Exercise 3 – Data Cleansing with Python**	**1/31**
4 2/3	Animated Data Visualization (Powerview)	**Beautiful Visualization, Chapter 19, Danyel Fisher – Julie Steele & Noah Illinsky.**	**Exercise 4 – Animation with Power BI**	**2/7**
5 2/10	Narrative Visualization	**Narrative Visualization: Telling Stories with Data – Edward Segel & Jeff Heer. Strategic Stories – Gordon Shaw, Robert Brown and Philip Bromiley.**	**Exercise 5 – Data Story**	**2/21**

6 2/17	Narrative Visualization	**Visualization Rhetoric – Jessica Hullman. Deeper Understanding of Sequence in Narrative Visualization – Jessica Hullman.**	**Exercise 5 – Data Story**	**2/21**
7 2/24	Visualization with Maps (Tableau) Midterm Exam Review	**Design for Information, Isabel Meirelles, Chapter 4.**	**Exercise 6 – Maps in Tableau**	**2/28**
8 3/2			**Midterm Exam**	**3/4**
9 3/9	Integrated Data Analysis	**Knowledge Generation Model for Visualization Analytics – Sasha et al.**	**Exercise 7 – Integrated Analysis with R**	**3/13**
10 3/16	Spring Break		Spring Break	
10 3/30	Small Multiples	**Visualization Analysis & Design, Chapter 12 - Tamara Munzner.**	**Exercise 8 – Multi-View Visualization**	**4/3**

11 4/6	SpatioTemporal Maps, ARCGIS & Geocoding Network Visualization	**Design for Information, Isabel Meirelles, Chapter 5.** **Design for Information, Isabel Meirelles, Chapter 2.**	**Exercise 9 - Animated Visualization & Geocoding** **Exercise 10 - Network Visualization using Gephi**	**4/10**
12 4/13	Visualizing with D3	**Interactive Data Visualization for the Web, Scott Murray, Chapters 3, 4, & 5.**	**Exercise 11 - HTML, SVG, CSS, Javascipt, Github**	**4/17**
13 4/20	Visualization and Sonification with D3	**Interactive Data Visualization for the Web, Scott Murray, Chapters 2 & 6,7,8 & 9.**	**Exercise 12 - Github D3 Sales/Product Data**	**4/24**
14 4/27	Hierarchical Data Visualization Final Exam Review	**Design for Information, Isabel Meirelles, Chapter 1.**	**Exercise 13 - Heatmap Sales/Product Data**	**5/1**
15 5/4			**Final Exam**	**5/6**

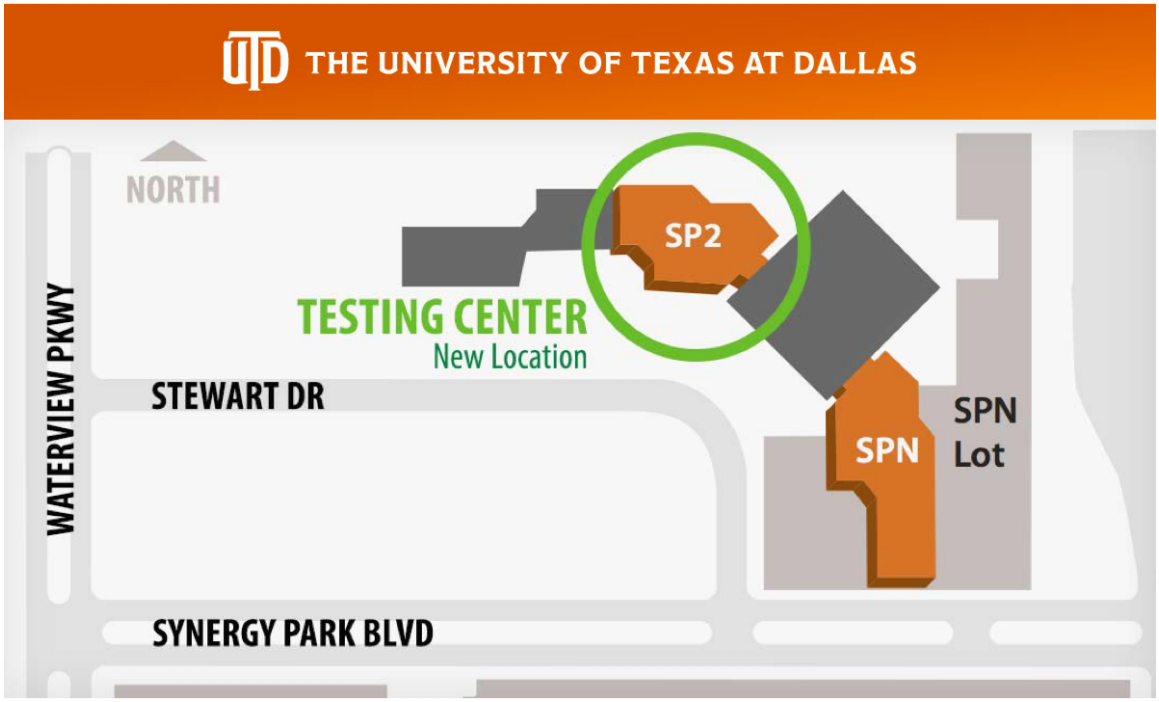
Proctored Exam Procedures
Proctored examinations are a requirement for this course. Seats for proctored examinations are provided on the UT Dallas campus with no charge for the student. Students using the UT Dallas Testing center will have a specific time that will be communicated in an announcement they are required to take the examination.

Students testing at UT Dallas can register their seat here:

http://www.utdallas.edu/studentsuccess/testing-center/

The UT Dallas Testing center provides passwords for all examinations regardless of location. Seat assignment is a student requirement for testing.

The testing center is located at Synergy Park North 2, SP2 on the map, first floor 3020 Waterview Parkway.



Grading Policy

Weights

Assignments		40%
Midterm Exam		25%
Final Exam		25%
Quiz, Class Policy Test, Course Evaluation Quiz		10%
Total		100%

Grading Scale

Scaled Score	Letter Equivalent
>= 93	A
>= 90	A-
>= 86	B+
>= 83	B

>= 80	B-
>= 76	C+
>= 70	C
< 70	F

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.