DAX641 Data Visualization, Design and Presentation

(3 credit hours)

Course Syllabus

Course Description

This concentration capstone course will synthesize the previous learning outcomes in the Data Analytics Concentration to compose and construct a final project demonstrating application of data presentation and design. The design of the final project will focus on visualizing data analysis in real-world application by combine techniques of data modeling and data analytic; data processing; mapping data attributes to graphical attributes; and, constructing strategic visual encoding based on known properties of visual perception. Additionally, students will justify the effectiveness of visualization designs and critical thinking necessary in design decisions. Students will create their own data visualizations, and learn to use visualization tools and software.

Course Learning Outcomes

By the end of this course, you will be able to:

1. Design a final data visualization project using the key techniques and theory of data analytics to include data models, graphical perception and techniques for visual encoding and interaction
2. Synthesize practical application by evaluating and making recommendations for strategic decision-making using visualization systems and digital presentations.

Prerequisites/Corequisites

DAX631

Required Textbook(s) and Resources

A digital copy of your textbook is included with your DragonACCESS fees for this course. Use the McGraw-Hill Connect tool in Moodle to view your book.

Jagga, S., & Kelly, A. (Ed.4).(2022).*Business statistics communicating with numbers.* McGraw Hill.

Be sure to also review the weekly **Explore** sections for additional library or web resources. For access to databases, research help, and writing tips, visit the Tiffin University Library. You might consider registering for one of the library's many webinars on library research, source

evaluation, copyright, and other topics, at the Library Events - Upcoming Events web page. For further assistance email a librarian, at: library@tiffin.edu.

Time Commitment

Effective time management is possibly the single most critical element to your academic success. To do well in this online class you should plan your time wisely to maximize your learning through the completion of readings, discussions, and assignments. Because of our accelerated, seven-week term, TU online courses are designed with the expectation that you dedicate a little over **six (6)** hours per credit hour to course activities and preparation **each week**. For example, for successful completion of a three-credit, seven-week online course you should reserve roughly **twenty (20) hours per week**.

To help plan your time and keep on track toward successful course completion, note the distinctive rhythm of assignment due dates:

1. All times assume Eastern Time (GMT-4).
2. Weeks begin at 12:00 a.m. ET on Monday and end at 11:55 p.m. ET on Sunday.
3. Unless otherwise noted, initial assignments or discussion posts are due by **11:55 p.m. ET** on **Wednesdays.**
4. Additional assignments or follow-up discussion posts are due by **11:55 p.m. ET** on **Saturdays, and**
5. Major assignments and reflections are typically due by **11:55 p.m. ET** on **Sundays.**

Learning Activities

This course focuses on developing your data visualization skills while exploring different features available in Tableau Public. Every week there will be at least one activity that evolves around Tableau application. You may think of them as mini-projects that will allow you to practice newly acquired knowledge of the tool.

Data analytics requires a strong foundation of statistics and continuous practice of techniques. To help you sharpen your sword of knowledge, you will be assigned chapters and related problems to work on every week. Make sure you review the chapters before you jump to the problems.

Finally, a number of weeks include discussions between the students. The main goal of these activities is to expand your views on application and techniques in data visualization across the board and facilitate development of some new ideas that you can take back to your workplace.

All of these weekly activities will prepare you to create your final project.

Key Assessment (Taskstream Submission)

This TU course features a “Key Assessment” that provides you the opportunity to demonstrate your program’s core competencies. It also shows how the course fits within the broader curriculum. For this course, Activity 6.1: Create Forecast, is the Key Assessment.

Grading

The chart below identifies the individual contributions from each type of activity, per week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Total
Discussions Activity 1.1 (25)	**Discussions** Activity 2.1 (25)	**Discussions** Activity 3.1 (25)	**Discussions** Activity 4.1 (75)	**Discussions** Activity 5.1 (75)	**Discussions** Activity 6.2 (50)	**Discussions** Activity 7.1 (65)	**340**
Assignments Activity 1.2 (50) Activity 1.3 (50)	**Assignments** Activity 2.2 (50) Activity 2.3 (25) Activity 2.4 (25)	**Assignments** Activity 3.2 (50) Activity 3.3 (20) Activity 3.4 (20) Activity 3.5 (20)	**Assignments** Activity 4.2 (25) Activity 4.3 (25)	**Assignments** Activity 5.2 (25) Activity 5.3 (25)	**Assignments** Activity 6.1 (50) Activity 6.3 (25)	**Assignments** Activity 7.2 (25) Activity 7.3 (25) **Final Paper** Activity 7.4 (65)	**600**
Reflection Activity 1.4 (10)	**Reflection** Activity 2.5 (10)		**Reflection** Activity 4.4 (10)	**Reflection** Activity 5.4 (10)	**Reflection** Activity 6.4 (10)	**Reflection** Activity 7.5 (10)	**60**
135	**135**	**135**	**135**	**135**	**135**	**190**	**1000**

Grading Scale

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
F	<70%

Please see the Academic Bulletin for grade appeal information.

Course Schedule and Weekly Checklist

Topic	**Learning Activities** (Due by 11:55 p.m. ET on day designated)
Start Here	❑ MON: Activity 1.1: Meet Your Classmates
Week 1: Introduction to Tableau Data Visualization Tool Install Tableau Become familiar with the different areas of Tableau Explore a delivered Workbook example with pre-populated data Model Building (selecting appropriate Model, including and excluding variables) Statistics and data Tabular and graphical methods Numerical descriptive measures	❑ SUN: Activity 1.2: Visualization Story ❑ SUN: Activity 1.3 – Create Visualization ❑ SUN: Activity 1.4 – Reflection
Week 2: Creating Our First Visualization with Tableau Dimensions and measures Tableau Visualization Report portability Inference with regression models Introduction to probability	❑ WED: Activity 2.1 – Initial Post ❑ SAT: Activity 2.1 – Secondary Posts ❑ SUN: Activity 2.2 – Create a Visualization ❑ SUN: Activity 2.3 – Chapter 4 Problems ❑ SUN: Activity 2.4 – Chapter 15 Problems ❑ SUN: Activity 2.5 – Reflection
Week 3: Exploring Tableau and Geography-Based Maps Continue exploration of Tableau setup and built-in features Using new datasets to enable geography-based maps to be used Regression models for non-linear relationships Discrete probability distributions Continuous probability distributions	❑ WED: Activity 3.1 – Initial Post ❑ SAT: Activity 3.1 – Secondary Posts ❑ SUN: Activity 3.2 – Geographical Visualization ❑ SUN: Activity 3.3 – Chapter 5 Problems ❑ SUN: Activity 3.4 – Chapter 6 Problems ❑ SUN: Activity 3.5 – Chapter 16 Problems

Topic	**Learning Activities** (Due by 11:55 p.m. ET on day designated)
Week 4: Tableau Dashboards Building a Tableau dashboard Discussing uses for an analytics dashboard within organizations Regression models with dummy variables Sampling and sampling distributions	❑ WED: Activity 4.1 – Initial Post ❑ SAT: Activity 4.1 – Secondary Posts ❑ SUN: Activity 4.2 – Chapter 7 Problems ❑ SUN: Activity 4.3 – Chapter 17 Problems ❑ SUN: Activity 4.4 Reflection
Week 5: Tableau Story Creation and Clustered Reporting Creating a Tableau Story using sheets Creating clustered reporting Interval estimation Statistical interference concerning two populations	❑ WED: Activity 5.1 – Initial Post ❑ SAT: Activity 5.1 – Secondary Posts ❑ SUN: Activity 5.2 – Chapter 8 Problems ❑ SUN: Activity 5.3 – Chapter 10 Problems ❑ SUN: Activity 5.4 Reflection
Week 6: Tableau Totaling, Calculated Fields and Parameters Using delivered Tableau totaling functions Creating custom calculated fields Creating custom parameters Time Series and forecasting	❑ WED: Activity 6.1 – Create Forecast ❑ WED: Activity 6.2 – Initial Post ❑ SAT: Activity 6.2 – Secondary Posts ❑ SUN: Activity 6.3 – Chapter 18 Problems ❑ SUN: Activity 6.4 - Reflection
Week 7: Tableau Final Project and Paper Building a new Tableau Workbook from scratch containing Sheets, Dashboard, Story, Calculated Field, and a Parameter Final Paper summarizing uses for data analytic applications and data visualization within an industry Returns, Index Numbers, and Inflation NonParametric tests	❑ WED: Activity 7.1 – Initial Post ❑ SAT: Activity 7.1 – Secondary Posts ❑ SUN: Activity 7.2 – Chapter 19 Problems ❑ SUN: Activity 7.3 – Chapter 20 Problems ❑ SUN: Activity 7.4: Final Paper ❑ SUN: Activity 7.5 - Reflection

Tips for Success

Successful online learning requires a good deal of self-discipline and self-direction. As seekers of the truth, we should be willing to challenge and review one another's academic work in a spirit of respectful comradery and constructiveness. Your course is a place for you to stretch and grow as you benefit from the expertise, knowledge, experience and diverse perspectives of your instructor and peers. Constructive feedback will challenge you to stretch your own thinking, thereby expanding your knowledge, understanding and application.

To get the most out of your learning experience, you should actively engage (participate) in **ALL** course activities. Course elements are arranged chronologically. To complete a week, simply work your way "down the page" through all of the course materials and activities.

Your Instructor Will Expect You to:

- Thoroughly review orientation materials (Start Here) within the first 48 hours of the term.
- Monitor your TU email account **daily** for important updates and announcements.
- Take ownership of your learning experience and act in a proactive, self-directed manner. That means:
    - Fully participate in all learning activities.
    - Complete assignments as described in rubrics or other instructions.
    - Submit all work on time and in the specified format (e.g. APA format for citations).
    - Utilize and incorporate instructor provided feedback to improve your work.
    - Ask questions so you can better understand course material or assignments.
    - Use the highest standards of intellectual honesty and integrity. For more information, see the TU Library guide: Digital Literacy: Netiquette and Internet Safety.
    - Treat others respectfully and demonstrate "netiquette" (online politeness and respectfulness) at all times. TU celebrates cultural uniqueness and expects all students to be considerate and thoughtful throughout their learning experiences.

You Should Expect Your Instructors to:

- Post an introductory announcement/email at the beginning of each week to provide updates and help you prepare for the week's activities.
- Maintain an active and engaged presence in all course activities and throughout the course.
- Respond to your emailed questions within 48 hours, if not sooner.

- Clearly communicate any absences or expected non-participation due to extenuating circumstances. For example, "I will be traveling to attend a funeral this week and may not be able to respond to questions or participate in forums for a couple of days."
- When grading your work:
    - clearly indicate their grading approach (what they like to see in submitted work as well as what types of errors they tend to penalize more harshly),
    - thoroughly review and evaluate your submissions in a timely manner (in less than 5 days for most assignments), and
    - provide constructive feedback that indicates the strengths and weaknesses of your work and provides suggestions on how you can improve your performance on future assignments.
- Advocate for your success as a learner and help guide you toward successful completion of the course activities and most importantly, attainment of the course learning outcomes.

Accommodations

The **Office for Disability Services** supports the institutional commitment to diversity by providing educational opportunities for qualified individuals with disabilities through accessible programs and services in compliance with Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act (ADA) of 1990.

If you need reasonable accommodations due to a documented disability, contact the Office for Equity, Access, & Opportunity 419.448.3021 or via email at disabilityservices@tiffin.edu.

Additional Resources & Support

For technical support, either email moodlesupport@tiffin.edu or call the 24/7 Technical Support Call Center at 855-664-1200.

If you need to consult an academic advisor refer to TU's Meet the Team page.

For information about TU's peer tutoring program see the Murphy Center's Tutoring Policies and Procedures page. Veterans and active military can seek assistance from TU's Veteran and Military Services Web Page.

Comments or Concerns

TU's online programs are designed to be student *driven*: to empower you with a voice and stake in your learning. Our courses feature multiple and varied ways that you can share feedback, and we invite you to become an active voice and help drive our improvement efforts. In addition to providing in-course feedback, we encourage you to submit questions or comments directly to the online team at online@tiffin.edu.