

College of San Mateo
Official Course Outline

1. **COURSE ID:** BUS. 209 **TITLE:** Data Visualization
Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; 96.0-108.0 Homework hours; 144.0-162.0 Total Student Learning hours
Method of Grading: Grade Option (Letter Grade or Pass/No Pass)
Recommended Preparation:
 BUS. 123, or MATH 200, and Eligibility for ENGL 100, or Eligibility for ENGL 105
2. **COURSE DESIGNATION:**
Degree Credit
Transfer credit: CSU; UC
3. **COURSE DESCRIPTIONS:**
Catalog Description:
 This course is an introduction to the principles and techniques for data visualization, the graphical representation of data that improves comprehension, communication, and decision making. Students will learn visual representation methods and techniques to increase the understanding of complex data and models using currently available technology.
4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
 Upon successful completion of this course, a student will meet the following outcomes:
 1. Demonstrate an understanding of the principles of creating and evaluating effective data visualizations and its effect on decision making
 2. Create various data visualizations such as in-time charts using software tools
 3. Apply visualization techniques in major application areas as well as generating reports using dashboard
 4. Demonstrate visualization techniques to a problem and associated data set
 5. Generate business insight and managerial communication from raw data
5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
 Upon successful completion of this course, a student will be able to:
 1. Discuss the principles of effective data visualizations and its effect on decision making
 2. Create various data visualizations such as in-time charts using software tools
 3. Apply the visualization techniques in major application areas as well as generating reports using dashboard
6. **COURSE CONTENT:**
Lecture Content:
 1. Understand the principles of creating and evaluating effective data visualizations
 - A. Introduction to Big Data
 - B. Introduction to Data Visualization
 2. The Big Data Business Mandate
 - A. Identifying “What’s Important?” to your organization/client. Examples…?
 3. Basic Charts and Plots, Multivariate Data Visualization
 - A. Creating Visual Analytics with Tableau Desktop
 - B. Connecting to your data
 - C. Describe common design issues in a visualization
 - D. Create and share visualizations files
 - E. Apply Principles of Perception, Color, Design, and Evaluation
 4. Understand the principles of creating and evaluating effective data visualizations
 - A. Big data analysis and its effect on decision making
 - B. Data Cleansing
 5. Critical thinking and summarizing data to gain insight and decision making
 - A. Intro to Data Calculation
 6. Use software tools to create various data visualizations:
 - A. In-time charts
 - B. Connect to data (Static and Dynamic)
 - C. Familiar with the visualization techniques in major application areas
 - D. Intermediate Data Calculation and Programming

- E. Various charts techniques
 - F. Generate reports using dashboard
 - G. Generate story
7. How it fits all together
- A. You will give a formal presentation of your work and obtain feedback and new insights.
 - B. As a senior business analyst using business intelligence tools, you will be making a presentation to senior executives to summarize the data you were provided in a story telling format supported by various charts by making recommendations and providing insights for the company to be more competitive.

7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- A. Lecture
- B. Activity
- C. Discussion
- D. Guest Speakers

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

- a. Discussion posts, including peer evaluation of key statistical concepts and statistical statements in business.
- b. Chapter practice problems.

Reading Assignments:

- a. One chapter of college level statistics textbook per week.
- b. Weekly chapter study guide including key concepts, videos, and additional support documents (approximately one hour per week).

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Class Work
- C. Exams/Tests
- D. Oral Presentation
- E. Projects
- F. Quizzes

10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- A. Murray, D. *Tableau Your Data!*, 2nd ed. Wiley, 2016
- B. Meier, M., Baldwin, D.. *Mastering Tableau 2021: Implement advanced business intelligence techniques and analytics with Tableau*, 3 ed. Packt Publishing, 2021
- C. Knaflic, C.N.. *Storytelling with Data: A Data Visualization Guide for Business Professionals*, 1st ed. Wiley, 2015

Origination Date: November 2023

Curriculum Committee Approval Date: December 2023

Effective Term: Fall 2024

Course Originator: Sujata Verma