

Data Visualization and Exploration

(STAT 5413, Spring 2025)

Dr. Sean Lavery, STEM 244, slaveryt@uco.edu

Class Time: 6:00 – 8:45pm

Class Location: STEM 102 (subject to change)

Office hours: by appointment; T 2:00 - 3:00 pm; W 10:00 - 11:00 am; Th 11:00 am - 12:00 pm

Course Description

This course focuses on key design principles and techniques for interactively visualizing data. The major goals of this course are to understand how visual representations can help in the analysis and understanding of complex data, how to design effective visualizations, and how to create interactive visualizations using modern computing tools.

Prerequisites

STAT 2113 with a grade of C or better or permission of the instructor

Course Outline

A detailed, regularly updated, course outline is available on the course webpage.

Student Learning Objectives

Upon completion of the course, the student will be able to

- critically evaluate visualizations and suggest improvements and refinements.
- understand key techniques and theory used in visualization.
- apply a structured design process to create effective visualizations.
- conceptualize ideas and interaction techniques using modern computing tools.
- interpret and communicate the results of a data analysis problem.

All learning objectives connect to T1 and T3 of the Transformative Learning section.

Transformative Learning

At the University of Central Oklahoma, we are guided by the mission of helping students learn by providing transformative experiences so that they may become productive, creative, ethical, and engaged citizens and leaders contributing to the intellectual, cultural, economic, and social advancement of the communities they serve. Transformative learning is a holistic process that places students at the center of their own active and reflective learning experiences. A student's major field is central to the learning experience and is a vital part of the "Central Six" tenets of transformative learning. All students will be transformed with (T1) Discipline Knowledge, (T2) Leadership, (T3) Research, Scholarly, and Creative Activities, (T4) Service Learning and Civic Engagement, (T5) Global and Cultural Competencies, and (T6) Health and Wellness.

Grading

You should expect weekly assignments, completed in or out of class, and a structured semester project with multiple checkpoints. Most work will be individual and some will be in small groups or pairs. Homework assignments may vary greatly in length.

The obligations of the final include submission of the materials for the semester project and a presentation.

Category	Weight
Individual homework and classwork	50%
Group work	10%
Project checkpoints	20%
Final (Project and Presentation)	20%

Final grades will be assigned according to the following scale.

A	B	C	D	F
above 90	80 - 89	70 - 79	60 - 69	below 60

A.D.A. Statement

The University of Central Oklahoma complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Students with disabilities who need special accommodations must make their requests by contacting Disability Support Services at (405) 974-2516. The DSS Office is in the Nigh University Center, Room 305. Students should also notify the instructor of special accommodation needs as soon as possible as accommodations are proactive, not retroactive.

UCO Student Information Sheet

University policies relevant to the semester can be found here <https://www.uco.edu/academics/academic-affairs/files/student-info-sheet.pdf>.