

INFO4709: Data Visualization

Summer 2026

Instructor:	Korani, Wael, Ph.D.	Lecture Time:	Th: material will be posted
Email:	wael.korani@unt.edu	Place:	Online via Zoom
Office:	Discovery Park E236Q	Phone:	(940) 565-2016

Course Information

- Course management at Canvas: <https://unt.instructure.com/>
- No pre-requisites.

Office Hours

- By appointment.
- Teacher Assistants:

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Textbooks

1. The Visual Display of Quantitative Information, 2nd Ed., by Edward R. Tufte, Graphics Pr, 2001. ISBN: 9780961392147. (recommend)
2. Envisioning Information, by Edward R. Tufte, Graphics Pr, 1990. ISBN: 9780961392116, (recommend).
3. Visualizing Data, by William S. Cleveland, Hobart Press, 1993, ISBN: 9780963488404, (recommend).
4. Fundamentals of Data Visualization, by Claus O. Wilke, (recommend). You may access it at website: <https://clauswilke.com/dataviz/>,

Software The following software will be used in this course.

- Tableau.
- Python and its libraries for data visualization

Objectives

Well designed Data Visualization would improve comprehension, memory, inference, and decision making. This course introduces techniques, algorithms and tools for creating effective data visualizations based on principles and techniques from graphic design, visual art, perceptual psychology and cognitive science. Emphasis is placed on the identification of patterns, trends, and differences among data sets.

The objectives of this course:

1. Students will be able to master the fundamentals of communication and alignment around concepts required for effective data visualization.
2. Students will be able to select and use techniques, algorithms and tools for creating visualization of real-world data.
3. Students will be able to use software tools including Python and Tableau to create static and interactive visualization for data from a variety of disciplines.
4. Students will be able to use data visualization to support decision-making and critical thinking.

INFO 4709 Topics :

Date	Topics (Material Covered)	Zoom Meeting
May 21	The Purposes of Data Visualization	
May 28	Data and Image Models	
Jun 4	Data Visualization in Practices	
Jun 11	Project and Tableau Tutorial	
Jun 18	First Exam	
Jun 25	Perception and Interaction	
July 2	Space Effectively and Spatial Layout and Color	
July 9	Second Exam	
July 12	Final Submission for the projects	
July 15	Tree and Graph Visualization and Tableau 1	
July 20	Third Exam	
July 21	Makeup Exam	

Teaching Philosophy

This course will be taught with traditional lectures through Zoom platform, but on-class discussions via Zoom are strongly encouraged.

This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

Technical Assistance

UIT Help Desk: <http://www.unt.edu/helpdesk/index.htm>. The University of North Texas provides student technical support in the use of Zoom and Canvas and supported resources. The student help desk may be reached at:

- Email: helpdesk@unt.edu
- Phone: 940.565-2324
- In Person: Sage Hall, Room

130 Hours

- Monday-Thursday 8am-midnight
- Friday 8am-8pm
- Saturday 9am-5p
- Sunday 8am-midnight

Canvas technical requirements: <https://clear.unt.edu/supported-technologies/canvas/requirements>

Minimal Technical Skills and Resources Needed

Each student needs an Internet connected computer that can run Zoom software. The computer should include a video camera, a microphone and a speaker for attending the online lectures and participating online discussions. Students are strongly encouraged to test their system for running Zoom and Canvas software at least one day before the first lecture.

Communication

Students can email their questions to the instructor and the teacher assistant (TA). They are also encouraged to talk to the instructor and TA during the office hours. Emails are normally respond within 24 hours, and all assignments, quizzes, projects, and papers should be graded within 4 days after the submission deadline.

Grading Policy

Grading will be based on assignments to be assigned as the course proceeds.

Grades will be computed as follows:

- 2 Project Assignments: 40%
- 3 Exams: 60%
- Grading Scale: A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 59 or below.

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All assignments, projects, quizzes and term paper requirements are post in Canvas, and students are required to uploaded their work into Canvas. Late submission of quizzes won't be graded, but late submission of other work will be graded with reduced points. The final grade is calculated based on grade points of assignments, project, and quizzes.

Incompletes

A grade of incomplete (I) will be given only for a justifiable reason (such as a serious illness or military service) and only if you are passing the course. It is your responsibility to contact the instructor to request an incomplete and discuss requirements for completing the course. If you do not remove the incomplete within the timeframe agreed upon with the instructor or within one calendar year, you will receive a grade of an F. Please refer to <http://essc.unt.edu/registrar/academic-record-incomplete.html> for more information.

Withdrawal

A grade of withdraw (W) or withdraw-failing (WF) will be given depending on your participation and grades to date. If you simply disappear and do not file a formal UNT withdrawal form, you may receive a grade of an F.

ADA Statement

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.

Class Policy

- **Attendance Policy:** You are expected to attend class via Zoom. You are responsible for announcements and assignments given in class. If you miss a class, it is up to you to obtain notes and any other information that was provided in the class. Those who do not attend class or review the recorded lectures in a timely manner can count on doing poorly in this course.
- **Academic Integrity Policy:** Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. [Insert specific sanction or academic penalty for specific academic integrity violation.]
- **Emergency Notification & Procedures:** UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.
- **Acceptable Student Behavior:** Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at deanofstudents.unt.edu/conduct.
- **Access to Information - Eagle Connect:** Students' access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail: eagleconnect.unt.edu/

- **Student Evaluation Administration Dates:** Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 [insert administration dates] of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notifica-tion" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website at <http://spot.unt.edu/> or email: spot@unt.edu.
- **Sexual Assault Prevention:** UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Ad-vocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvo-cate@unt.edu or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Appendix II: Tutorials

- SQL (Structured Query Language) is a standardized programming language that is used to manage data and perform various operations. Many data visualization tools and database management systems use SQL to query data from a data source, update data, combine data from multiple data sources, and other functions. Therefore, a data visualization specialist should know the basics of SQL even if they may not explicitly use SQL to access the data. For example, a data visualization specialist may need to combine several tables in a data source using the SQL "join" operation.

Here is a list of some online resources that will help you understand the basics of SQL: W3 Schools,

Introduction to SQL: the link: https://www.w3schools.com/sql/sql_intro.asp

- Tableau is an enterprise data visualization and analytics tool. Here's a list of some Tableau resources to help you use Tableau for basic data visualization and data analytics. It is important to point out that mastering the data visualization principles introduced in the lectures is critical for creating meaningful data visualizations. Knowing the functions of the tool is just the first step which will allow you to tell the story within your data.

1. Tableau, Tutorial: Get Started with Tableau Desktop, the link: <https://help.tableau.com/current/guides/get-started-tutorial/en-us/get-started-tutorial-home.htm>

2. Guru99, Tableau Tutorial for Beginners: Learn Basics in 3 Days, the link: <https://www.guru99.com/tableau-tutorial.html>

3. Simplilearn, Tableau for beginners: Youtube video: https://www.youtube.com/watch?v=xwj2p4LSD1k&ab_channel=Simplilearn