INFO 4709: Data Visualization and Communication (Fall 2026)

Instructor Information

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Office Hours: Every Friday, 5:30–6:30 p.m.

Course Description, Structure, and 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:

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

This course will be taught online with traditional lectures through Zoom platform and recorded sessions, on-class discussions via Zoom are strongly encouraged. Software tools such as PowerBI, Tableau and Python will be needed to complete the assignments, we don't teach how to use tools and programming in this class. Please read books or follow other online tutorials to learn those tools in depth.

Required/Recommended Materials

Course website: https://unt.instructure.com/courses/131558

Textbooks:

- Internal textbook on canvas. (required)
- Tufte, E. R. (2001). The visual display of quantitative information (Vol. 2). Cheshire, CT: Graphics press. ISBN: 9780961392147. (optional)
- Munzner, T. (2014). Visualization Analysis and Design. A K Peters Visualization Series, CRC Press. (optional)
- Knaflic, C. N. (2015). Storytelling with data: A data visualization guide for business professionals. John Wiley & Sons. (optional)

Required Technology: No requirement on software. The following software are preferred in this course.

- Tableau, PowerBI, Microsoft Excel, R, Python

How to Succeed in this Course

While I want to make myself as available as possible to each of you, I do have to place some limitations on when I can be contacted. I would prefer that most general questions go through the Q & A forum in the Discussion Board area. If you have a general question about the course or assignments, please post it there. Either I will answer it, or, one of your classmates will. This way we can all benefit from questions asked, and they can be answered in a venue that the whole class can see. You may also want to find someone in class to be a "buddy" with. This will give you at least one other person who you can email with questions.

If you have a private question, please contact me via email and I will respond within 24 hours on weekdays (usually sooner). Please do not expect a response over the weekend. Please use my phone number as a last resort - but, also, please use it if you need to!

Office hours offer you an opportunity to ask for clarification or find support with understanding class material. Come visit me! I encourage you to connect with me and/or my TA for support. Additional office hours, in person and virtually, will be offered by appointment. Don't feel nervous to come to the office hours. If you have difficulties in understanding the course content, different opinions about quiz answers, or don't know how to complete your lab assignments, please come to visit. Successful students in this course usually come to my office hours frequently. Please utilize office hours and other academic resources as much as you can. Your success is our goal!

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 Access (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, refer to the Office of Disability Access website (http://www.unt.edu/oda). You may also contact ODA by phone at (940) 565-4323.

Assessing Your Work

Assessments

A student's grade is composed of the following:

- Weekly Quiz (15%)
- Reading assignments and review paper (20%)
- Three project assignments (60%)
- Final project presentation (5%)

Assignment Submission Policy

- All assignments, projects, quizzes and term paper requirements are post in Canvas, and students are required to upload their work into Canvas.
- No make up for quiz will be offered under any circumstance.
- No late submission for final project.

- Late submission of other work within 5 days will be graded with reduced points (10 percent deduction for each late day up to 50 Percent), no points after 5 days.
- Final grade is calculated based on total grade points of assignments, project, quizzes, and term paper. NO final exam is given this time.

Course Topics/Schedule

The contents of the course are organized into 14 weeks. The following is a list of the covered topics. It will be updated according to progress.

1. Course Introduction
2. The Graph Excellence and Integrity
3. Data Models
4. Business Intelligence, Data Warehouse and Data Visualization
5. Data Visualization in Big Data Era
6. Visualization Design with Microsoft PowerBI and Excel (Hands-On Lab)
7. Advanced Visualization Design with Python Visualization Library (Hands-On Lab)
8. Introduction to Geographical Analysis and Visualization
9. Exploratory Data Analysis
10. Data Visualization with Large Language Models
11. Perception
12. Interaction
13. Color
14. Final Student Project Presentation

Course Policies

Assignment Policy

Students should submit the assignments and term project reports at class site in canvas.unt.edu.

Grade Dispute

Your grade is determined by your performance on the learning assessments and is assigned individually (not curved). All assessment scores will be posted on the course page. If you would like to review any of your grades, or have questions about how something was scored, please email me to schedule a time for us to meet online. Any grade disputes must be submitted in writing and within one week of receiving the grade.

Course Incomplete Grade

The UNT Graduate Catalog (http://catalog.unt.edu/index.php?catoid=16) describes and explains grading policies. A grade of Incomplete (I) will be given only for a justifiable reason and only if the student is passing the course. The student is responsible for meeting with the instructor to request an incomplete and discuss requirements for completing the course. If an incomplete is not removed within the time frame agreed to by instructor and student, the instructor may assign a grade of F.

Withdrawal

The UNT Graduate Catalog (http://catalog.unt.edu/index.php?catoid=16) describes and explains withdrawal policies and deadlines. The UNT semester course schedule lists specific deadlines regarding withdrawal. A grade of Withdraw (W) or Withdraw-Failing (WF) will be given depending on a student's attendance record and grade

earned. Please note that a student who simply stops attending class and does not file a withdrawal form may receive an F.

Attendance Policy
Research has shown that students who attend class are more likely to be successful. You should attend every class unless you have a university excused absence such as active military service, a religious holy day, or an official university function as stated in the Student Attendance and Authorized Absences Policy (PDF) (https://policy.unt.edu/sites/default/files/06.039_StudAttnandAuthAbsence.Pub2_.19.pdf). If you cannot attend a class due to an emergency, please let me know. Your safety and well-being are important to me.

Students' Responsibility for Their Learning
The students are required to follow course schedule and finish the class work, assignments, and term projects. Students are expected to study at least 15 hours per week to achieve satisfactory class performance.

UNT Policies

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.

ADA Policy
UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time; however, ODA notices of 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 accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.

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.

Retention of Student Records
Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

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 Dean of Students 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/.

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 Advocates 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 SurvivorAdvocate@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.

Use of Student Work
A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student's permission unless all of the following criteria are met:

- The work is used only once.
- The work is not used in its entirety.
- Use of the work does not affect any potential profits from the work.
- The student is not identified.
- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student's written permission.