

CS 458 – Introduction to Information Visualization

Catalog Description: Tools and techniques for designing, developing, and deploying interactive visualizations of abstract data sources. Discusses techniques based on principles from design, cognitive science, and perceptual psychology. Topics include: 1D, 2D, 3D, multivariate representations, time-series, graphs & trees, text and documents, and interaction techniques.

Credits: 4 **Terms Offered:** Spring

Prerequisites: CS 361 + Junior standing or above.

Courses that require this as a prerequisite: None

Course Content:

- Perceptual and cognitive design issues
- Dynamics and interaction
- Design principles and process
- Representing
 - Distributions
 - Time Series
 - Maps
 - Trees and Graphs
 - Text and Documents
 - Multivariate Data

Learning Resources:

One of the following:

- Readings in Information Visualization Using Vision to Think by Card, Mackinlay, and Shneiderman.
- Information Visualization: Perception for Design (3rd Edition) , by Colin Ware.
- Prentice Hall, 2007 The Visual Display of Quantitative Information (2nd Edition). E. Tufte. Graphics Press, 2001.
- Envisioning Information, by E. Tufte.
- Beautiful Evidence, by E. Tufte.
- Visual Explanations, by E. Tufte.

Measurable Student Learning Outcomes:

At the completion of this course, students will be able to:

1. **Identify and Describe** various data types and the most appropriate means for encoding them
2. **Compare/Contrast** visualization techniques for various types of data
3. **Explain** the process of information visualization
4. **Describe** effective interaction/presentation techniques for information visualization systems
5. **Envision, design, prototype, and produce** a visualization that uses:
 - a. multivariate abstract data
 - b. dynamic interaction
 - c. a web-based library such as D3

Evaluation of Student Learning:

- Class Participation (20%)
- Homework Assignments (40%)
- Term Project (40%)

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.