



# INSC 489 - Information Visualization, Spring 2023

**Instructor:** Prof. Jiangen He (he/him)

**Office:** Room 449 Communication Building,  
1345 Circle Park Drive

**Office hours:** noon-2:00pm on Tuesdays and  
Thursdays

**Zoom link:**

<https://tennessee.zoom.us/my/jiangen>

**Email:** [jiangen@utk.edu](mailto:jiangen@utk.edu)

**Personal Website:** [www.jiangenhe.com](http://www.jiangenhe.com)

**Course Mode:** In-person classes

**Time:** TR 2:30PM-03:45PM

**Place:** Humanities and Social Sciences  
Building-205A

**Prerequisite:** INSC 360 - Programming for  
Information Professionals

## SIS Office Information

- 450 Communications Bldg.
- 1345 Circle Park Drive
- Knoxville, TN 37996-0341
- SIS Office: 865.974.2148
- Fax (SIS): 865.974.4667

# Course Information

## Catalog Description

Visual, intuitive and interactive representation of information. Fundamental understanding of human perceptual and cognitive capabilities, computer graphics, user interface and creativity. Designs and techniques for visualizing various types of data.

## Student Learning Outcomes

Students who complete this course will be able to

- Present information in an intuitive, efficient, effective, and aesthetic manner, for the purposes of explaining ideas and analyzing data.
- Compare methods for visually encoding and interacting with data and understand how these different methods might guide users towards different conclusions
- Select appropriate visualization methods for the data types of multivariate tables, trees and networks, geospatial, and text data. Understand different ways of formally measuring trade-offs in different visualization approaches.
- Critically and constructively assess the design of existing visualizations.
- Apply data transformations including deriving new data, aggregation, and filtering.
- Gain practical experience and proficiency in creating static and interactive visualizations in Tableau and D3.js.

## Course Design

- Course materials will delivered on Canvas, including reading materials, slides, etc.
- Submit programming assignments on GitHub and other assignemnts on Canvas. Do not email them to the instructor.
- For technical issues, contact the OIT HelpDesk via phone (865) 974-9900 or online at <http://help.utk.edu/>

## Required Text(s)

All readings will be provided by the instructor.

## Recommended Readings

- Murray, S. (2017). *Interactive data visualization for the web: an introduction to designing with D3*. " O'Reilly Media, Inc."
- Munzner, T. (2014). *Visualization analysis and design*. CRC press.

## Communication

### Email

I am required to communicate with you through your UTK email address. If you prefer to use another address, consult the [OIT Helpdesk \(Links to an external site.\)](#) to obtain directions for forwarding your UTK email to your preferred address if you do not wish to check both accounts.

### Instructor Availability

I am available during weekdays via email. To ensure a quick response, start your message subject line with INSC489. I will reply to your email as soon as I can. I am also happy to speak with you in my office or via zoom during office hours.

## Course Outline

#	Week	Aa Topic	☰ Assignment Due
1		<u>Introduction to Information Visualiztion</u>	
2		<u>Data Abstraction</u>	
3		<u>Task Abstraction and Interaction</u>	Assignment 1 Due
4		<u>Visual Representations and Data Transformation</u>	
5		<u>Color</u>	Assignment 2 Due
6		<u>Marks + Channels</u>	
7		<u>Tabular Data</u>	Mid-term Project
8		<u>Map</u>	

# Week	Aa Topic	☰ Assignment Due
9	<u>Network and Tree</u>	Assignment 3 Due
10	<u>Text</u>	
11	<u>Set</u>	Assignment 4 Due
12	<u>Filter and Aggregation</u>	
13	<u>Evaluation</u>	Assignment 5 Due
14	<u>Advanced topics</u>	
15	<u>Final Project Presentation</u>	
16	<u>Final Week</u>	Final Project Report

## **Assignments, Assessments, and Evaluations**

### **Academic Integrity**

Students should be familiar with [the Hilltopics Student Handbook](#), and comply with all academic policies. This includes the University of Tennessee Honor Statement and the Academic Integrity Policy.

The Honor Statement reads: “An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. ‘As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.’” For more information, see the Honor Statement on the Academic Policies and Procedures page of the current [catalog](#) for student and faculty responsibilities.

The Academic Integrity policy reads: “Study, preparation and presentation should involve at all times the student’s own work, unless it has been clearly specified that work is to be a team effort. Academic honesty requires that the student present his or her own work in all academic projects, including tests, papers, homework, and class presentation. When incorporating the work of other scholars and writers into a project, the student must accurately cite the source of that work.” For additional information, see [the Student Code of Conduct](#).

### **Late Assignments**

Late work will be deducted 5% per twenty-four hour period that elapses after the due date. If foreseen or unforeseen circumstances prevent you from completing an assignment on time, you

may request an extension. Extensions must be requested in advance of the due date. If the situation warrants an extension, we will determine a new due date for the essay based on your individual circumstances.

## Plagiarism

Plagiarism in any of its forms is intolerable, and attention to matters of documentation in all written work is expected and required. Inadvertence, alleged lack of understanding, or avowed ignorance of the various types of plagiarism are not acceptable excuses.

Specific examples of plagiarism are:

1. Copying without proper documentation (quotation marks and a citation) written or spoken words, phrases, or sentences from any source.
2. Summarizing without proper documentation (usually a citation) ideas from another source (unless such information is recognized as common knowledge).
3. Borrowing facts, statistics, graphs, pictorial representations, or phrases without acknowledging the source (unless such information is recognized as common knowledge).
4. Collaborating on a graded assignment without the instructor's approval.
5. Submitting work, either in whole or in part, created by a professional service and used without attribution (e.g., paper, speech, bibliography, or photograph).

Students who may be unsure of the nature of plagiarism should consult the instructor or a guide for writing research reports. Resources are available through the University Libraries, including a [Citing Sources guide](#).

Infractions of academic integrity are penalized according to the severity of the infraction but may include a course grade of "F."

## Breakdown

This table provides a brief summary of assignment by name, due date, point value and percentage of final grade. A brief description of each assignment follows the table.

Aa Title	# Point Value	# Percentage of Final Grade	≡ Note
<a href="#">Assignment 1</a>	80	8%	

Aa Title	# Point Value	# Percentage of Final Grade	☰ Note
<u>Assignment 2</u>	80	8%	
<u>Assignment 3</u>	80	8%	
<u>Assignment 4</u>	80	8%	
<u>Assignment 5</u>	80	8%	
<u>Mid-term project</u>	100	10%	A tableau project
<u>Final Project Proposal</u>	50	5%	
<u>Final Project Presentation</u>	50	5%	
<u>Final Project Report</u>	150	15%	A D3.js proejct
<u>Labs</u>	150	15%	
<u>Mini Presentation</u>	50	5%	
<u>Attendance</u>	50	5%	
<u>TOTAL</u>	1000	100%	

## Preparing Assignments

Specific instructions on how to prepare assignments will be given at the time they are assigned.

## Submitting Assignments

Submission instruction will be specified for each assignment. Assignments will be posted on Canvas.

## Grading Scale

Semester grades will be assigned according to the following scale:

Aa Letter	☰ Points	☰ Performance
<u>A</u>	93-100	Superior performance (4 quality points)
<u>A-</u>	90-92.99	Intermediate superior performance (3.7 quality points)

Aa Letter	☰ Points	☰ Performance
<u>B+</u>	88-89.99	Very good performance (3.3 quality points)
<u>B</u>	83-87.99	Good performance (3.0 quality points)
<u>B-</u>	80-82.99	Intermediate good performance (2.7 quality points)
<u>C+</u>	78-79.99	Fair performance (2.3 quality points)
<u>C</u>	73-77.99	Satisfactory performance (2.0 quality points)
<u>C-</u>	70-72.99	Unsatisfactory performance (1.7 quality points)
<u>D+</u>	68-69.99	Unsatisfactory performance (1.3 quality points)
<u>D</u>	63-67.99	Unsatisfactory performance (1.0 quality points)
<u>D-</u>	60-62.99	Unsatisfactory performance (0.7 quality points)
<u>F</u>	0-59.99	Failure performance (0.0 quality points)
<u>S</u>		Satisfactory; only assigned for C or better work when a course is taken on an S/NC grading basis. Carries no point value.
<u>NC</u>		No Credit; indicates a failure to complete a course satisfactorily, and is only assigned for C- or worse work when a course is taken on a S/NC grading basis. Carries no point value.
<u>I</u>		Under extraordinary circumstances and at the discretion of the instructor, the grade of I (Incomplete) may be awarded to students who have satisfactorily completed a substantial portion of the course but cannot complete the course for reasons beyond their control. An I carries no quality points. If the I grade is not removed within one calendar year or upon graduation, it shall be changed to an F and count as a failure in the computation of the grade point average.
<u>W</u>		Indicates student has officially withdrawn from the course or the university. Carries no point value.

## Incompletes

Based on adopted University of Tennessee-Knoxville policy, a grade of I (Incomplete) is reserved for emergencies that prevent the student from completing the course on time. Incompletes are granted only under "the most unusual of circumstances" and solely at the discretion of the instructor. Plan your semester's course of study carefully to insure sufficient time to complete the required work. For students who simply "disappear" without contacting the instructor and without completing the required form, an "F" is submitted.



## Computing Requirements and Resources

### Requirements

- You must have adequate computing skills, including but not limited to the use of word processing, Web browsers, e-mail, listservs, and Canvas software.
- You must obtain a UT email account. In addition, you must have the PowerPoint Reader or the regular PowerPoint software installed on your computer to download the lecture notes from Canvas.

### Technical Support

The [Office of Information Technology \(OIT\)](#) ([Links to an external site.](#)) provides training classes in using varied technologies for students at no charge (advance registration is required).

### Software

- Tableau (free for students)
- GitHub account
- WebStorm (Free for students) or another Web Development IDE



## Course Attendance and Participation Policies

### Learner Expectations

- Be prepared for all classes
- Be respectful of others

- Actively contribute to the learning activities in class
- Abide by the UT Honor Code

## **Instructor Expectations**

At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester, you may be requested to assess aspects of this course either during class or at the completion of the class. You are encouraged to respond to these various forms of assessment as a means of continuing to improve the quality of the UT learning experience.

## **Attendance and Participation**

You are expected to attend all classes and actively participate. Regular attendance is considered mandatory. Each student is allowed three absences from class for the entire semester without direct penalty to his or her grade. You will lose 1 point per miss after you missed three classes. **If a student misses 30% (8 classes) or more of the total classes, the instructor may issue a failing grade for lack of participation.**

## **Inclement Weather**

The chancellor (or appointed representative) may officially close or suspend selected activities of the university because of extreme weather conditions. When a decision to close is made, it applies to all classes (whether on-campus or online). The information is distributed to the campus community, shared with local media, and posted on the University homepage at <http://utk.edu>.

## **Additional Policies and Points of Information**

### **Disability Services**

Any student who feels they may need an accommodation based on the impact of a disability should contact [Student Disability Services](#) in Dunford Hall at 865-974-6087, or by video relay at 865-622-6566, to coordinate reasonable academic accommodations.

### **University Civility Statement**

Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus. For more information, see [the UT Principles of Civility and Community](#).

## **CCI Diversity Statement**

The College of Communication and Information recognizes that a college diverse in its people, curricula, scholarship, research, and creative activities expands opportunities for intellectual inquiry and engagement, helps students develop critical thinking skills, and prepares students for social and civic responsibilities. All members of the College benefit from diversity and the quality of learning, research, scholarship and creative activities is enhanced by a climate of inclusion, understanding and appreciation of differences and the full range of human experience. As a result, the College is committed to diversity and equal opportunity and it recognizes that it must represent the diversity inherent in American society. The College is acutely aware that diversity and fairness are foundations that unite the College's faculty, staff, students, and the larger communication and information community.

## **Instructor Status as a Title IX Mandatory Reporter**

University of Tennessee faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. Please be aware that if you choose to confide in a faculty member regarding an issue of sexual misconduct, dating violence, or stalking, we are obligated to inform the University's Title IX Coordinator, who can assist you in connecting with all possible resources both on- and off-campus. If you would like to speak with someone confidentially, the Student Counseling Center (865-974-2196) and the Student Health Center (865-974-3135) are both confidential resources. For additional resources and information, visit [titleix.utk.edu](http://titleix.utk.edu).

## **Disclaimer**

The instructor reserves the right to revise, alter or amend this syllabus as necessary. Students will be notified in writing / email of any such changes.