ICS/DATA/ACM-484/ICS-684: **Data Visualization**
Fall 2023 Course Syllabus
This course space is being shared by students in the following CRNs [77512,77513,77511,79449] and if you do not wish to be in a shared course space, please drop this section and register for another section or alternate course.

Welcome to *ICS/DATA/ACM-484/ICS-684*. In this class we will learn the fundamentals of creating visualizations from data, see examples of different types of visualizations, and practice creating visualizations. We will learn how to design a visualization system that is effective and conveys a story.

Instructor: Dr. Nurit Kirshenbaum / Email nuritk@hawaii.edu / Office Keller 102A

Office hours: email for appointment

Reading: Selected papers

Prerequisites: Two ICS 300-level courses, or instructor's consent.

Schedule: Lectures are held on Mondays 3:00-5:30 PM, Keller 103

Class Format: Class participation is important. Some classes will include in-class activities, so students are expected to bring their laptop.
We will also use the collaboration tool SAGE3 developed in UH by the LAVA group. Please install SAGE3 from https://sage3.sagecommons.org. If you have used SAGE3 in other classes, note that the client has changed over the summer and you **must download it again** from the website. If you are a Windows user, please ignore the prompt to update the software as it is currently buggy.
Some classes will be fully dedicated to student presentations.

Course Website: I will use laulima as a repository for files and assignments. You may also refer to the class' SAGE3 board
sage3://sage3.manoa.hawaii.edu/#/enter/4f4f98a9-2943-41d0-82ec-dd3acf62d866/e4b807b7-2ee9-4333-b3e4-ae47b93410c5

Learning Objectives:
- Students develop software programs for producing data visualizations.
- Students learn about the nuances in the different types of data visualizations- including information visualization, geospatial visualization, scientific visualization, social network visualization, medical visualization
- Students can evaluate data visualization approaches critically.
- Students can present and explain their data visualizations.
- Students can learn to work in teams to co-develop data visualizations.

Schedule (may be subject to change):

Jan. 9th - first day	Date		Topic	Due
Week 1	8/21/2023		Introduction	
Week 2	8/28/2023		Basics	
Week 3	9/4/2023	Holiday		
Week 4	9/11/2023		Code refresher and examples	Assignment 1
Week 5	9/18/2023		Perceptual process and design	
Week 6	9/25/2023		Specialized visualizations	Assignment 2
Week 7	10/2/2023		Interaction	
Week 8	10/9/2023		Telling a story	Assignment 3
Week 9	10/16/2023		Additional topics	Assignment 4
Week 10	10/23/2023		Project pitches	Pitch doc
Week 11	10/30/2023		Paper presentations	
Week 12	11/6/2023		Paper presentations	Paper report
Week 13	11/13/2023		Paper Presentations	
Week 14	11/20/2023		Project update	Project update
Week 15	11/27/2023		Project update	
Week 16	12/4/2023		Project presentations	Project report

Grading: Your final grade for this course will be calculated as follows
- Class participation: 10%
- Homework assignments: 40% (10% for each)
- Literature Presentation: 20%
- Final Project: 30% (partitioned to pitch, update, and final presentation)

Grades in this course will not be curved. Scaling of assignment scores may be done if necessary; if this occurs, everyone will have their grade increased by the same amount. A weighted average will be applied (as shown above) and final grades will be assigned as follows: A+ = 97%-100%, A = 93%-96%, A- = 90%-92%, B+ = 87%-89%, B = 83%-86%, B- = 80%-82%, C+ = 77%-79%, C = 73%-76%, C- = 70%-72%, D+ = 67%-69%, D = 63%-66%, D- = 60%-62%, F = 0%-59%. Grades in the "gray area" between grades will be determined by your participation and trends (improving or declining) over the semester.

Expectations: to fulfill all the work for this course, the student is expected to perform the following:
- Class participation: attend class regularly, be responsive to communication by the instructor and by other students, participate in class presentations and hands-on activities

- Homework Assignments: we will have 4 short assignments at the first portion of the semester:
  - 1- Visualization critique
  - 2- Basic visualizations
  - 3- Geospatial visualizations
  - 4- Advanced visualization
  - The student will work on each assignment **individually**. Students are encouraged to ask questions in class regarding the assignment as well as consulting with classmates as long as the work is done individually.
  - Class examples will be shown on the ObservableHQ https://observablehq.com/ platform and students are encouraged to use that platform as well. However, students may use ipython notebooks (Google Colab https://colab.google/ is recommended) if they prefer.
    ACM students that do not want to program may use other tools to create the assignment results and supply evidence of how the visualizations were created. I recommend Plotly Chart Studio https://chart-studio.plotly.com/ which is an online tool that uses a library that we will use in class.
- Literature Presentation: Academic papers on visualizations are a good source for information about the problems that can arise when visualizing information, how to approach them, and how to evaluate either the problem or solution with human subjects. Students are expected to choose one (1) paper from the selected collection of papers (or any other paper with the instructor's approval) and present it to the class.
  Graduate students are expected to create a synthesis of at least five (5) papers in a topic related to visualization.
- Final Project: This is a **group** project. Students will work in groups of 2-3 to create a website that showcases a visualization of their choice. They will present their pitches for class approval and feedback, present an update, and a final presentation showcasing the working website.

Absences and Lateness Policy: Assignments will show their due date on laulima. Late submissions will lose 20% of the assignment's grade for each late day. I will not accept assignments after 5 late days. Unsubmitted assignments will be graded zero (0).
You will be asked to register to present papers, pitches, and your project. Make sure that you register to a time slot that you can attend without being late. If you have a problem with any of these dates, speak to the instructor as soon as possible. Problems will be solved on a case-by-case basis.

Policies and Resources

1. **Attendance policy:** *Students who are enrolled in this course, but never attend will be flagged by the course instructor for non-participation before the last day to add/drop (for 100% tuition refund) deadline. Flagged students will be administratively dropped by the Office of the Registrar. Any changes to a student's enrollment status may affect financial*

aid eligibility and can result in the return of some of all of federal student financial aid. (specify for your course; may also be covered under Grading section)

2. **Statement on Disability: KOKUA Program** If you have a disability and related access needs, please contact the KOKUA Program (Office for Students with Disabilities) at 956-7511, KOKUA@hawaii.edu, or go to Room 013 in the Queen Liliʻuokalani Center for Student Services. Please know that I will work with you and KOKUA to meet your access needs based on disability documentation. Kokua's services are confidential and offered free of charge.

3. **Academic Integrity and Ethical Behavior: Office of Student Conduct** (recommended text) Cheating, plagiarism, or other forms of academic dishonesty are not permitted within this course and are prohibited within the System-wide Student Conduct Code (EP 7.208). Examples include: fabrication, facilitation, cheating, plagiarism, and use of improper materials. Any incident of suspected academic dishonesty will be reported to the Office of Student Conduct for review and possible adjudication. Additionally, the instructor may take action in regards to the grade for the deliverable or course as they see fit.

4. **Office of Title IX**: (808) 956-2299 / t9uhm@hawaii.edu / https://manoa.hawaii.edu/titleix/

5. **Department of Public Safety**: (808)956-6911 (Emergency) / (808)956-8211 (Non-Emergency) http://manoa.hawaii.edu/dps/

6. **UH System Basic Needs** include food and housing, childcare, mental health, financial resources and transportation, among others. Student basic needs security is critical for ensuring strong academic performance, persistence and graduation and overall student well being. If you or someone you know are experiencing basic needs insecurity, please see the following resources: UH System Basic Needs