SIADS 521 Syllabus – W24

Course Overview and Prerequisites

This course is the first exposure to visual exploration of data students will experience in the program. Where the data manipulation course leaves students with an understanding of how to transform data from files into meaningful data structures, this course will teach students how to look for (visually) aggregate patterns within the data. Importantly, this course reaffirms many of the degree prerequisites, by presenting visualizations using statistical examples which are germane to the area of exploratory data analysis activity. Further, learners will be aware of emerging toolkits for visual exploration of data in Python through an independent assignment.

Prior to this course, students should have an understanding of the pandas library, which is covered in Data Manipulation, and a firm understanding of quantitative measures, such as means, standard deviations, and confidence intervals.

Instructor and Course Assistants

- Instructor: Ramiro Serrano Vergel - ramiros@umich.edu
- Course Assistants: Erik Lang - eriklang@umich.edu, Jake Huang - yiju@umich.edu, Pat Steffes - psteffes@umich.edu, Deepti Wilson - deeptip@umich.edu

Communication Expectations

Contacting instructor and course assistant: Use the course channel in Slack for all communication that may benefit any other students (this should include about 90% of communication). For private concerns please use course staff email.

Email response time: 24 - 48 hours

Slack response time: 24 - 48 hours

Office hours: Weekly Office Hours Calendar

Required Textbook

Chapter 4, Exploratory Data Analysis, from Experimental Design and Analysis, by Howard J. Seltman. Copyright 2018 Howard Seltman.

Matplotlib 3.0 Cookbook by Srinivasa Rao Poladi (O'Reilly). Copyright 2018 Packt Press 978-1-789-13571-8.

Textbook link provided for Matplotlib 3.0 Cookbook allows free usage through the University of Michigan Library. University credentials required.

Technology Requirements (unique to this course)

None

Accessibility

Screen reader configuration for Jupyter Notebook Content

Learning Outcomes

1. Create effective visuals for data, including line plots, bar charts, scatter graphs, histograms, box plots, and heatmaps, all using python libraries;
2. Relate the characteristics of data, such as the dimensionality of the data, central tendency measures, and variance, with the appropriate visual exploration mechanisms;
3. Understand basic statistical techniques and how they might be used in exploratory data analysis;
4. Use the python matplotlib package to create charts and visuals quickly as you engage in other courses in this degree;
5. Be aware of emerging new libraries for visual exploration of data with the python language.

Use of external resources and services (e.g ChatGPT)

There are a number of exciting emerging technologies to help people both learn and be productive in computing, writing, and data science! It's a thrilling time, but also one where we need to reflect on our purpose in this class and how we might incorporate these into our learning, teaching, and credentialing activities. Please read the Guidelines for use of external resources and services for understanding reasonable behavior.

Course Schedule

This course **begins on Tuesday, March 5, 2024** and **ends on Monday, April 1, 2024.**

See the course calendar for information on office hours.

Grading

There is no autograder for this course. Everything is manually graded by us!

Course Assignment	Percentage of Final Grade
Assignment 1 - Jupyter Notebook Assignment	25%
Assignment 1 - Reflection exercise on Qualtrics	2.5%
Assignment 2 - Jupyter Notebook Assignment	25%
Assignment 2 - Reflection exercise on Qualtrics	2.5%
Assignment 3 - Visual Technique Assignment	15%
Assignment 4	30%
Total	**100%**

Note: All assignments are required to earn credit for this course.

Letter Grades, Course Grades, and Late Submission Policy

Refer to the MADS Assignment Submission and Grading Policies section of the UMSI Student Handbook (access to Student Orientation course required)

For this course, no late assignments will be accepted (0%). Extenuating circumstances will be considered (please reach out to the instructor as soon as possible).

Percentage grades will be converted to letter grades using the following formula (**Note that an A+ is only awarded by doing a bonus!**):

Total Assignment Scores	Letter Equivalent
>100	A+
95-100	A
90-95	A-
85-90	B+
80-85	B
75-80	B-
70-75	C+
65-70	C
60-65	C-
55-60	D+
50-55	D
<50	E

Accommodations

Refer to the Accommodations for Students with Disabilities section of the UMSI Student Handbook.

Use the Student Application Form in Accommodate to begin the process of working with the University's Office of Services for Students with Disabilities.

Help Desk(s): How to get Help

- Degree program questions or general help - umsimadshelp@umich.edu
- Coursera's Technical Support (24/7) - https://learner.coursera.help/

Library Access

Refer to the U-M Library's information sheet on accessing library resources from off-campus. For more information regarding library support services, please refer to the U-M Library Resources section of the UMSI Student Handbook (access to the Student Orientation course required).

Student Mental Health

Refer to the University's Resources for Stress and Mental Health website for a listing of resources for students.

Student Services

Refer to the Introduction to UMSI Student Life section of the UMSI Student Handbook (access to the Student Orientation course required).

Data

University instructors, administrators, and researchers use course- and program-based about your interactions with learning tools to support the U-M teaching and learning mission. Data is used by U-M and its vendors to both support your immediate learning as well as to improve the teaching and learning environment through research and innovation. Data may include, but is not limited to, activity within the Coursera environment, use of learning tools such as Jupyter, Slack, and Zoom, and use of business, research, and learning tools developed by U-M. More information about how the University of Michigan protects your privacy, as well as instructions on how to learn more about data and privacy at the university, can be found in the U-M Privacy Statement.