Syllabus for SIADS 521: Visual Exploration of Data

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
Chris Brooks (brooksch@umich.edu)

Course Lecturers: Bobby Madamanchi - amadaman@umich.edu; Anthony Giove - agiove@umich.edu; Deepti Pandey - deeptip@umich.edu; Greg Myers - gamyers@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.


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.

Course Schedule
This course begins on Monday, October 25, 2021 and ends on Sunday, November 21, 2021.
See the course calendar for information on office hours.

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

<table>
<thead>
<tr>
<th>Course Assignments</th>
<th>Percentage of Final Grade</th>
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</thead>
<tbody>
<tr>
<td>Assignment 1 - Jupyter Notebook Assignment</td>
<td>25%</td>
</tr>
<tr>
<td>Assignment 2 - Visual Technique (due end of third week)</td>
<td>25%</td>
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<tr>
<td>Assignment 3 - Jupyter Notebook Assignment</td>
<td>15%</td>
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<tr>
<td>Assignment 4</td>
<td>35%</td>
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</tbody>
</table>
Total Assignment Scores | Letter Equivalent
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>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
Refer to the [Accommodations for Students with Disabilities](#) section of the UMSI Student Handbook (access to the Student Orientation course required).

Use the [Student Intake Form](#) 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/](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).