

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.

[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.

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!

Course Assignments	Percentage of Final Grade
Assignment 1 - Jupyter Notebook Assignment	25%
Assignment 2 - Visual Technique (due end of third week)	25%
Assignment 3 - Jupyter Notebook Assignment	15%
Assignment 4	35%

Total	100%
Bonus Assignment 1 - Contributing to the Ten Rules	5%

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 (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/>

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).