



UNIVERSITY OF MARYLAND

INST408G – Special Topics in Information Science; Big Data Analysis and Visualization

Fall 2019

Class: BLD3 4220
Class Time: Th 9:00am – 11:45am

Instructor: Dr. Ian Page
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Office Hours: By appointment
Communication: UMD ELMS & Email

Course Description

Modern technology has provided access to an unprecedented amount of data for the private sector, research initiatives, and even personal consumption at the individual-level. With modern processing capabilities and current data analysis techniques, data scientists are able to scrutinize large and previously un-wieldy datasets and use them to identify significant trends and forecast future patterns. In spite of the importance and near ubiquity of Big Data, individuals with the necessary skills, critical thinking abilities, and professional preparedness remain uncommon.

This course focuses on the practical and professional training of students interested in working with data in an applied setting. Through a data-centered research project, students will develop the skills necessary to work with data using practical analytical techniques and data visualizations. This course will emphasize concepts related to the process of research and data analysis—including how to find, organize, clean, and analyze data; critical thinking and problem-solving; communication of ideas; collaboration with peers; and troubleshooting unexpected outcomes. Scheduled class meetings will focus on the development of a data-centric research project, coding issues, and the continual review of individual and group progress.

Course Outcomes

Upon completion of this course, students will be able to:

- Apply relevant methods and frameworks to the planning, modeling, and/or preparing necessary to produce a project in a manner that is authentic to data-centered research.
- Critique, revise, and refine a project according to the authentic manner of the discipline.
- Effectively communicate the application of scholarship through ancillary material (*written, oral, and visual*)
- Collaborate in order to bring about a successful outcome.

Required Books & Reading

Primary literature will be posted to Canvas for reading and analysis.

Course Policies

General: Please refer to the following website for all official university-wide course policies:
<http://www.ugst.umd.edu/courserelatedpolicies.html>

I highly encourage all students to carefully study all UMD course related policies. While all of them are important to us, I especially call out the policies regarding:

- Code of Student Conduct
- Sexual Misconduct
- Non-Discrimination

You should review all course policies and think carefully about your communications and actions with other students and faculty accordingly. Please speak with me at any time if you have questions or concerns or wish to discuss any similar issue.

Evaluation

Student learning will be assessed via 10 assignments throughout the semester. The instructor will provide complete details on how each individual assessment will be graded. Additional information regarding the weight of each assignment is available below.

ASN	Description	Type	% of grade
1	Working Collaboratively	Individual	5
2	Data Analysis I	Individual	10
3	Data Analysis II	Individual	10
4	Project Launch	Group	10
5	Data Analysis III	Individual	10
6	Initial Results (Data Analysis)	Individual	10
7	Initial Results (Data Visualizations)	Individual	10
8	Project Final Draft	Group	15
9	Presentation	Group	10
10	Weekly Meeting Attendance	Individual	10

Evaluation Notes:

- Assignments must be completed and submitted by the due dates and times posted on ELMS. Unless otherwise noted, assignments submitted late will lose 10% for each 24-hour period of lateness.
- Students are cautioned to carefully verify all files submitted for assessments to ELMS. Students are responsible for ensuring all files are of the correct type, are non-corrupted, and are the intended version of the file. File submissions that do not fulfill these expectations may not be counted for credit.

Final Letter Grade Determination

Final letter grades will be determined using the following guidelines:

+	97%	+	87%	+	77%	+	67%		
A	93%	B	83%	C	73%	D	63%	F	< 60%
-	90%	-	80%	-	70%	-	60%		

Course Schedule

This schedule is subject to change as the semester progresses.

Week		Class Activity	Assignment Due
1	8/29	Course Introduction	
2	9/5	Research Project Introduction Team Formation	
3	9/12	Technology Introductions & Installations	ASN1 Working Collaboratively
4	9/19	Introduction to R	ASN2 Data Analysis I ASN3 Data Analysis II
5	9/26	Project Consultations (Research Ideas)	ASN4 Project Launch
6	10/3	Advanced R	ASN5 Data Analysis III
7	10/10	Project Troubleshooting	
8	10/17	Project Consultations (Data Analysis)	ASN6 Initial Results (Data Analysis)
9	10/24	Data Visualizations & Tableau	
10	10/31	Tableau Applications	
11	11/7	Project Consultations (Data Visualizations)	ASN7 Initial Results (Data Visualizations)
12	11/14	Presentation Best Practices	
13	11/21	Practice Presentations	ASN8 Project Final Draft
14	11/28	NO CLASS (THANKSGIVING)	
15	12/5	Presentations	ASN9 Presentation
End of Course			ASN10 Weekly Meeting Attendance