Course Syllabus for SIADS 601: Qualitative Inquiry for Data Scientists

Instructor and Course Assistants

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Course Overview and Prerequisites

Overview

This course provides an introduction to *qualitative* research methodology in a way tailored to data scientists. Through qualitative research, data scientists can gain hunches about, generate hypotheses, and develop narratives – all of which are useful in the analysis and reporting of quantitative data. Methodologically, this course focuses on semi-structured interviews, qualitative data analysis through affinity walls, and the construction of report narratives. Students will develop relevant skills through a project they identify in the first few days of the course.

Prerequisites: There are no prerequisites beyond college-level communication skills.

How to Get Help

If you have questions concerning the degree program, encounter a technical issue with Coursera, or issues using Slack, please submit a report to the ticketing system at umsimadshelp@umich.edu .

If you have an issue specific to the Coursera environment, you can also begin a live chat session with Coursera Technical Support (24/7) by visiting their main support page and selecting the chat icon at the bottom right of your page or view Coursera troubleshooting guides. (you may be asked to log in to your Coursera account).

For questions regarding course content, refer to the **Communications Expectations** section below.

Learning Outcomes

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

1. Collect, represent, and analyze qualitative data about a quantitative data set, by…
2. Conducting semi-structured interviews;
3. Processing interview notes into discrete pieces of qualitative data; and
4. Analyzing qualitative data using affinity walls.
5. Develop a narrative about qualitative findings that support later quantitative analysis.
6. Communicate qualitative findings in written form.

Communication Expectations

- Please use Slack or email for all communication with the instructor. When using Slack, please use the "@name" handle for the instructor, so that they are notified of your message. Response time may vary based on content, but most emails or slack messages will receive a response within 1 business day.
- Course announcements and (non-assignment) discussion will occur on Slack. Individual communication to students may occur through umich.edu email.
- Instructors will aim to have assignments graded and returned to you within 3 days from the date they are due. (Assignments submitted late may take longer to grade.)
- Office Hours (All times are in Eastern Time – please see “Time Zones” note below):
    - 9-9:30am ET on Wednesdays (except for week of Feb. 6-10, when it will be 9-9:30am ET on Feb. 7 (Tue))
    - 5-5:30pm ET on Wednesdays (except for week of Feb. 6-10, when it will be 5-5:30pm ET on Feb. 9 (Thu))

Course Schedule

- **This course begins on Wednesday, Feb. 1, 2023 and ends on Tuesday, Feb. 28, 2023.**
- Assignment *recommended* due dates vary by week. Please see the schedule below and pay attention to due dates. All items are due at **11:59 pm, Eastern Time**, on the date indicated (please see “Time Zones” note below).
- Because this course has a different rhythm than most other MADS courses, due dates are flexible, and assignments will not be penalized for lateness unless they are submitted later than the last day of the course. You do NOT need request explicit permission to submit assignments late, but a message to let the instructor know that you may miss a due date is appreciated. Please also message us if an item you submitted is overdue for grading.

- The posted due dates should thus be considered *strong recommendations,* so that you can stay on track through the course. In any case, you should not fall too far behind. All assignments must be turned in by the end of the course. The major assignments are sequential and must be completed in order; in addition, the latter three of five assignments have crucial dependencies on external interviewees.
- Week-by-week schedule
    - **Week 1**: You will define your course project, schedule interviews, and start drafting the interview protocol.
    - **Week 2**: You will complete the interview protocol and start interviews.
    - **Week 3**: You will complete interviews, complete data extraction, and start your affinity wall.
    - **Week 4**: You will complete your affinity wall and write a final report.

Grading and Assignments Overview

Item type	Item name	Recommended Due Dates
Course Launch		Feb. 1 (Wed)
Quiz	Week 1 Quiz 1	Feb. 4 (Sat)
Quiz	Week 1 Quiz 2	Feb. 4 (Sat)
Staff Graded Assignment	Project Definition	Feb. 4 (Sat) optional revision due Feb. 7 (Tue)
Staff Graded Assignment	Project Definition Peer Review	Feb. 5 (Sun)
Graded Discussion Prompt	Week 1 Discussion	Feb. 5 (Sun)
Quiz	Week 2 Quiz 1	Feb. 11 (Sat)
Staff Graded Assignment	Interview Protocol	Feb. 11 (Sat) optional revision due Feb. 14 (Tue)
Staff Graded Assignment	Interview Protocol Peer Review	Feb. 12 (Sun)
Graded Discussion Prompt	Week 2 Discussion	Feb. 12 (Sun)

3 Interviews	[No associated Coursera item]	Feb. 13 (Mon) through Feb. 24 (Fri) earlier is better; ideally, at least two interviews between Feb. 13-17.
Quiz	Week 3 Quiz 1	Feb. 18 (Sat)
Staff Graded Assignment	Data Extraction	Feb. 18 (Sat)
Staff Graded Assignment	Data Extraction Peer Review	Feb. 19 (Sun)
Graded Discussion Prompt	Week 3 Discussion	Feb. 19 (Sun)
Staff Graded Assignment	Affinity Wall	Feb. 23 (Fri)
Staff Graded Assignment	Affinity Wall Peer Review	Feb. 25 (Sat)
Quiz	Week 4 Quiz 1	Feb. 25 (Sat)
Staff Graded Assignment	Final Report	Feb. 26 (Sun)
Final Deadline for All Assignments		Feb. 28 (Tue) [hard deadline]

All assignments are required to earn credit for this course:

- Quizzes: There are five quizzes throughout the course; it is recommended that you take them after watching the corresponding videos and readings.
- Discussion Participation: At three points during the course, you will be prompted to engage in light online discussion about the course content or assignments.
- Peer Review: You will be asked to provide feedback to your peers on four assignments. Through these reviews, you will receive quick feedback on your own work, and also have a chance to see how others have completed their assignments.
- Project Definition: Identify a data set, a broad question about it, and three data-set stakeholders who are willing to be interviewed by you. Those will compose a project definition that you use to practice all the skills taught throughout this course.
- Interview Protocol: Write a protocol for the three interviews that you will conduct. The protocol includes an introduction section, a series of main questions and follow-up questions, and a conclusion section.
- Data Extraction: Extract discrete items of qualitative data from the interviews that you have conducted.

- Affinity Wall: Conduct qualitative data analysis through a process of hierarchical clustering and summarization.
- Final Report: Write up the findings of your analysis in the framework of a coherent narrative.

Note: The course requires conducting three semi-structured interviews. These are not graded, but are an essential part of the course. You will not be able to complete the last three assignments (worth a total of 45% of the course grade) without doing the interviews.

Instructional Material

This course is taught through video segments, handouts, and external readings. Video segments and handouts will be made available through the Coursera platform. All readings for this course are available online, either as a direct link or through the U-M library.

Course Handouts

https://drive.google.com/drive/folders/1UQIfYZtu6eQaLR2T9XDU3zgQrsKQU9Te?usp=sharing
External readings:

- Rap, Robyn. (2018). Qualitative + Quantitative: How qualitative methods support better data science. Indeed Engineering Medium blog. https://medium.com/indeed-engineering/qualitative-before-quantitative-how-qualitative-methods-support-better-data-science-d2b01d0c4e64
- Parker, Ian. (2010). The Poverty Lab: Transforming development economics, one experiment at a time. New Yorker, May 10, 2010. https://www.newyorker.com/magazine/2010/05/17/the-poverty-lab
- Harrell, Margaret C. and Melissa A. Bradley. (2009). Data Collection Methods: Semi-Structured Interviews and Focus Groups. RAND Corporation. https://www.rand.org/pubs/technical_reports/TR718.html
    - *Skim* the section on semi-structured interviews on pp. 30-77. You do NOT have to read in detail. You do NOT have to do the embedded exercises. This document is useful as a reference for any time you conduct semi-structured interviews.
- Scupin, Raymond. (1997). The KJ method: A technique for analyzing data derived from Japanese ethnology. *Human Organization*, 65(2):233-237. (U-M students should have access here: https://www.jstor.org/stable/44126786)
    - *Skim* – you do NOT have to read in detail.

Optional reading:

- Geary, A., Strebel, T., and Dougall, W. (2022). Classification of pneumonia in chest x-rays using convolutional neural networks: A capstone project.

https://medium.com/university-of-michigan-siads-699-team-12/classification-of-pneumonia-in-chest-x-rays-using-convolutional-neural-networks-a-capstone-project-12a2c963600f

- This Medium article is the outcome of a UMSI MADS captone project by three students. You can see how they applied skills from SIADS 601 to better understand the context in which they were doing data analysis. One of the authors wrote, "I wanted to let you know that... if we hadn't engaged in this process [that we learned in SIADS 601] we would have produced something questionable to both radiologists and possibly even other data scientists." The students received an A+ on their project.

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).

Academic Integrity/Code of Conduct

Refer to the Academic and Professional Integrity section of the UMSI Student Handbook. (access to Student Orientation course required).

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

Accessibility

All materials provided through Coursera should adhere to common accessibility standards, but if you have *any* challenges accessing material or completing assignments, do not hesitate to contact the instructors.

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).

Time Zones

All announced date/times will be in U.S. Eastern Time. Be aware that the United States transitions from Eastern *Standard* Time (EST) to Eastern *Daylight* Time (EDT) on March 14, 2021 (Sunday) at 2am, EST. At that point, Eastern Time moves forward by one hour (i.e., what used to be 2am becomes 3am). All assignments are due at 11:59pm ET on the date indicated. If you're not used to working across time zones, you may find it useful to use an online time-zone converter, e.g., https://www.timeanddate.com/worldclock/converter.html?iso=20200629T060000&p1=784 .