Introduction to Data Science (LING/MATH/DSST 289) — Fall 2021

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Description:

Data science is an interdisciplinary field concerned with creating knowledge from data and communicating those results. Data science needs to be learned *by doing* data science. We will focus in this course on collecting data and creating data-driven stories within a variety of different domains. We will use a mix of manual techniques—including creating hand-drawn graphics—and digital methods using freely-available programming languages. At the end of the semester, students will be able to collect and use data in order to address important social, cultural, and scientific questions.

Books and Materials:

The following two texts are required for the course:

- *Storytelling with Data*, by Cole Nussbaumer Knaflic (2015), ISBN-13: 978-1119002253.
- *Dear Data*, by Giorgia Lupi and Stefanie Posavec (2016), ISBN-13: 978-1616895327.

You will also need something in which to hand-write homework assignments and some class activities. A spiral-bound, unlined sketchbook is highly recommended for this purpose. Finally, we will also use the open-source R programming language, which will be installed during the first week.

Course Format:

Most class meetings will have an assigned homework task, such as a reading or data collection activity, that should be completed before class. These will not be formally graded, but their completion is part of the participation expectations (see below). During class, most of our time will be devoted to actively working on tasks individually or in small groups.

Exams:

This course has four exams given throughout the semester. Exams are approximately scheduled to be given on every third Thursday (see the course website for the exact dates). Exams may have both in-class and take-home components.

Course Engagement:

All students enrolled in the course are expected to be fully engaged in class meetings. Engagement includes arriving on time, bringing required materials, completing any assigned homework, and being attentive and engaged with all class activities. While attendence at all class meetings is preferable, in the understanding that unavoidable conflicts and circumstances (job interviews, illness, etc.) arise from time to time, students will not be penalized for their first two absences. At the end of the semester, a grade will be given for overall course engagement. See the website for a more detailed rubric.

Additionally, missing 5 or more courses will result in an automatic failing grade for the semester.

Final Project:

During the final week of the semester, students will present a final project based on an independent data-collection task. Detailed intructions and a grading rubric will be provided at least one month before the project is due.

Grades:

A final numeric grade is determined by taking the average of the four exams, course engagement, and final project grades. Letter grades are assigned as follows: A (93-100), A- (90-92), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (73-76), C- (70-72), and F (0-69). Grades of A+ and D are not normally given.

Other Resources:

Other resources, including information about office hours and a full list of campus offices offering support to UR students, as well as more detailed instructions for each of the course components are posted and kept updated on the class website.