Fundamentals of Data Visualization
21:198:220 (3 credits)

COURSE DESCRIPTION:
This course introduces undergraduate students to Data Visualization. This course is intended to teach students how to create meaningful charts and figures that can simultaneously convey useful information and be pleasing to the eye. Students will learn to use the programming language R to develop graphics. The course is divided into three general themes:

1. Research Methods and Statistics
2. Programming in R
3. Generating Meaningful and Insightful Graphics

The course aims to offer an interactive environment where students feel comfortable to generate and share ideas. Students will be motivated to discuss topics reviewed in class and to critically assess how others have used data visualization to convey the results of their analyses.

PREREQUISITE(S):
There are no prerequisites for this course. **This course may be counted as an elective for computer science majors.**

IMPORTANT NOTES:
- R is a free software environment for statistics and graphics that students can install by visiting [https://www.r-project.org/](https://www.r-project.org/).

TEXT BOOK:
Rahlf, T. (2017). *Data Visualisation with R: 100 Examples*. Springer. [https://doi.org/10.1007/978-3-319-49751-8](https://doi.org/10.1007/978-3-319-49751-8)

DEPARTMENT WEBSITE: [http://www.ncas.rutgers.edu/math](http://www.ncas.rutgers.edu/math)

THIS COURSE COVERS THE FOLLOWING:
Chapter 1: Data for Everybody
Chapter 3: R boot camp
Chapter 2: Perception
Chapters 6.1 & 6.2: Categorical Data
Chapter 6.3: Categorical Data
Chapter 7.1: Distributions
Chapters 7.2 & 7.3: Distributions
Chapters 8.1 & 8.2: Time Series
Chapters 8.3 & 8.4: Time Series
Chapter 9.1: Scatter plots
Chapter 9.2: Scatter plots
Chapters 10.1 & 10.2: Maps
Chapters 10.3 & 10.4: Maps

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