STAT 100 Course Description and Goals

In the modern world we are bombarded with data and arguments based on them. Such data are used to inform, position arguments, and influence decisions. The use of data and statistical terminology provides an appearance of authority that strives to make arguments and information compelling and convincing. Media reports of statistical studies can be confusing and contradictory, and indeed often make claims beyond the scope of the actual study. The ability to decipher and analyze uses of data is an essential skill in the contemporary world. The goal of this class is to develop statistical literacy, which means developing a critical eye for processing communications that rely on data and data analysis. We explore common biases and misconceptions, and develop tools to critically assess the validity and use of data to establish claims. The course format is two 50-minute lectures and one 50-minute recitation per week. The recitations include exercises designed to develop and reinforce the lecture material.

Topics covered in the course include:

- Developing an intuitive understanding of probability concepts and interpreting probabilities presented to the public;
- Interpreting common ways in which quantitative information, e.g., graphs and charts, is communicated in the press;
- Reading an article that references a statistical study and identifying the important quantities in the study, their characteristics, and relations between them;
- Determining whether a statistical study is observational or experimental in nature and the degree to which the environment of the observation or study could be controlled;
- Identifying how a survey was conducted, and determining its validity and biases;
- Interpreting statistical quantities, errors, and uncertainties quoted in public and private communication;
- Understanding the degree to which alternative explanations for data-based results are possible.