

MAT 531: Mathematical Statistics I

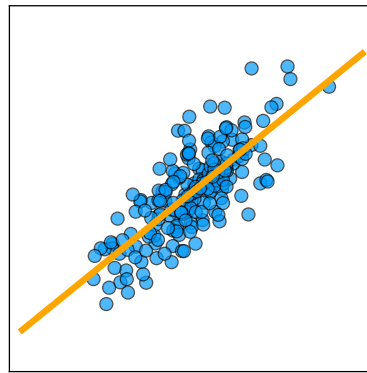
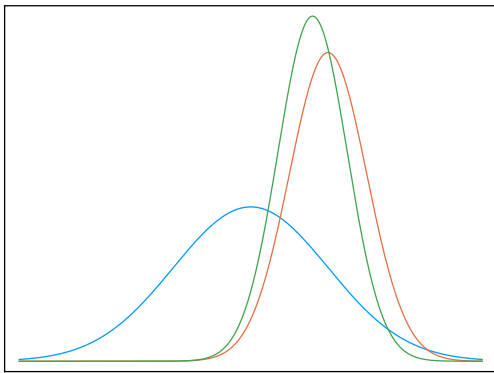
University of Maine
Department of Mathematics and Statistics

Fall 2023

Instructor: Aden Forrow (aden.forrow@maine.edu)

Course Description: How do we learn from observations of the world around us? How confident should we be in claims made from data? Statistics, the quantitative study of uncertainty, gives a language and set of tools for precisely understanding both our knowledge and our ignorance.

This course will cover the mathematical foundations of statistics, building up from the axioms of probability theory to hypothesis testing, parametric inference, and regression. In between we will see random variables, continuous and discrete distributions, moment generating functions, distributions of functions of random variables, sampling distributions, and Bayesian inference.



Class Time: MWF 9-9:50pm in Neville 421

Textbooks:

- *Statistical Inference*, Casella and Berger (2002).
- *Bayesian Data Analysis*, Gelman, Carlin, Stern, Dunson, Vehtari, and Rubin (2020). Available free online.

Prerequisites: A grade of C or better in MAT 425, STS 434 or permission.

Experience with programming and linear algebra will be helpful.