

ISyE 6412, Fall - 2026
Syllabus
Instructor : A.Shapiro

Textbook: G. Casella and R.L. Berger, Statistical Inference,
<https://mybiostats.wordpress.com/wp-content/uploads/2015/03/casella-berger.pdf>

Class notes will be distributed, and periodically updated.

Topics outline:

Introduction

Multivariate normal distribution

Quadratic forms of normal random variables

Statistical inference of linear models

Principles of data reduction

Sufficient statistics

Ancillary statistics

Complete statistics

Point estimation

Maximum Likelihood

Bayes estimators

Best unbiased estimators

Bayesian optimality

Loss function optimality

Hypothesis testing

Likelihood ratio test

Most powerful tests

Loss function optimality

Asymptotics

Consistency and efficiency

Elements of large samples theory

Classification

Support Vector Machines

Grading policy: homework - 5%, one midterm (take home) exam - 45%, final (take home) exam - 50%

Office hours: by appointment