

# BSTA 621 Statistical Inference I

Spring 2023

## Content:

This class will cover the fundamental concepts and results of statistical inference. We will focus on Chapter 6-10 of Casella and Berger. We will cover the following topics: data reduction, point estimation, hypothesis testing, interval estimation and basic concepts about asymptotics. Students are expected to be able to understand the key concepts, theorems and techniques, and use them to solve new problems.

**Prerequisites:** BSTA620

## Instructor

Haochang Shou

219 Blockley

[hshou@pennmedicine.upenn.edu](mailto:hshou@pennmedicine.upenn.edu)

Office Hours: Thursday 4:00-5:00pm & by appointment

## TA

Ganesh Chandrasekaran

[gchandra@pennmedicine.upenn.edu](mailto:gchandra@pennmedicine.upenn.edu)

Office Hours: TBA

## Class Schedule:

Tue and Thur 10:15-11:45am

Blockley 418

## Testbooks:

1. *Statistical Inference*, 2<sup>nd</sup> edition, by Casella and Berger. (required).

## Grading:

Homework: 40%

Midterm: 30% (covers the first half of the semester) (in class)

Final exam: 30% (covers the materials for the whole semester, in class closed book)

Note: you are encouraged to discuss your homework among classmates, but each should write up his/her own assignments. You are not allowed to look at materials from the previous years as some materials might be recycled.

### Tentative Schedule

Date	Topics	Chapter
Jan 12	Overview	6.1
17	Sufficiency	6.2
19	Sufficiency	6.2
24	Sufficiency	6.2
26	Likelihood	6.3
31	Equivariance	6.4
Feb 2	Finding estimators	7.1
7	Finding estimators	7.2
9	Finding estimators	7.2
14	Evaluating estimators	7.3
16	Evaluating estimators	7.3
21	Evaluating estimators	7.3
23	Evaluating estimators	7.3
28	Review for midterm	
Mar 2	Midterm exam	
7	no class, spring break	
9	no class, spring break	
14	Finding tests	8.1, 8.2
16	Finding tests	8.2
21	no class, ENAR	8.2
23	Finding and evaluating tests	8.2, 8.3
28	Evaluating tests	8.3
30	Finding interval estimators	9.2
Apr 4	Finding interval estimators	9.2
6	Evaluating interval estimators	9.3
11	Evaluating interval estimators	9.3
13	Asymptotic evaluations for point estimation	10.1
18	Asymptotic evaluations for point estimation	10.2
20	Asymptotic evaluations for hypothesis testing	10.3
25	Review	
TBA	Final Exam	