Spring 2020

STAT 6802 Statistical Theory II

lecture:	MWF 8:50am – 10:05am in University Hall 86
instructor:	Vincent Q. Vu (vqv at stat osu edu)
office:	Cockins Hall 428b
office hours:	W 1:00pm – 2:50pm, or by appointment
web:	Announcements and course materials will be posted on the Carmen course website (carmen.osu.edu)
prerequisites:	STAT 6801 or permission of instructor

1 Overview

Statistics 6802 is the second half of a two-course sequence on probability and statistical inference. As in Statistics 6801, the emphasis is on a fairly rigorous theoretical development of the modeling and inferential tools needed in statistical practice and research. An important course objective is for the students to become comfortable with the formulation, conceptualization, and execution of theoretical and methodological ideas, as they relate to sound modeling and data analysis practice.

The course will cover selected topics from Chapter 6 (Principles of Data Reduction), Chapter 7 (Point Estimation), 8 (Hypothesis Testing), 9 (Interval Estimation), and 10 (Asymptotic Evaluation) of the textbook. A more detailed, tentative course plan is provided at the end of this document.

2 Textbook

- Casella, G. and Berger, R.L., "Statistical Inference," 2nd. edition. Duxbury Press

Please read the book as the course progresses, as I will be unable to cover everything in class.

3 Tentative schedule

Week	Topic
1	Data reduction: Sufficiency, Minimal Sufficiency, Ancillarity, Completeness
2	Finding estimators: MOM and MLE
3	Finding estimators: Bayes Estimators; Evaluating estimators: MSE
4	Evaluating estimators: Unbiasedness
5	Probability review; Midterm exam 1
6	Evaluating estimators: Consistency
7	Evaluating estimators: Asymptotic efficiency
8	Hypothesis testing: Introduction

Week	Topic
9	Hypothesis testing: Likelihood ratio tests (LRT); Midterm exam 2
10	Spring break
11	Hypothesis testing: Power function, p-values
12	Hypothesis testing: Neyman–Pearson, Karlin–Rubin
13	Hypothesis testing: Large sample tests
14	Interval estimation
15	Confidence intervals and sets
16	Review; Final exam

4 Coursework & grading

The final course grade will be based on the following components:

- 20% Homework (weekly quizzes on Fridays, lowest score dropped)
- 25% Midterm exam 1 (Friday, February 7, 2020, in-class)
- 25% Midterm exam 2 (Friday, March 7, 2020, in-class)
- 30% Final exam (Friday, April 24, 2020, 10:00am – 11:45am, in-class)

4.1 Homework

Homework will be assigned regularly, but it will not be collected for grading. Instead, we will have weekly short quizzes consisting of a few randomly selected problems from the latest homework assignment.

4.2 Exams

There will be two midterm exams and one final exam. All exams are in-class and closed book/notes. The final exam will be comprehensive.

5 Rules and policies

5.1 Attendance

It is the responsibility of students to make up for any material covered in class during any absence.

5.2 Academic misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

5.3 Disability services

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.