MATH170S: INTRODUCTION TO PROBABILITY AND STATISTICS 2

Winter 2021

GENERAL INFORMATION

Instructor	Hanbaek Lyu	(Email: *hlyu@math.ucla.edu*, Office: MS 6156)
Lectures	MWR 1:00PM - 1:50PM using zoom (Link posted on CCLE)	Course webpage
Office hours	(tentative) T 2:00PM - 4:00PM	
Textbook	Hogg, Tanis, Zimmerman, *Probability and Statistical Inference* (10th Edition)	
	Lecture notes will be provided on CCLE	
Prerequisites	Math 31A, 31B, and 170E	
TA	Adam Lott	(Email: *adamlott99@math.ucla.edu*)

COURSE DESCRIPTION

The Math 170E and 170S two-quarter probability and statistics sequence is aimed to equip math majors with essential understanding and skills for handling uncertainties and data sets. Math 170S is an introduction to statistics. (More rigorous approach to probability theory is provided in the alternative sequence of 170A/B.) Topics include sampling; estimation and the properties of estimators; construction of confidence intervals and hypotheses testing. It is designed to meet the Society of Actuaries' VEE Requirements for Mathematical Statistics. Letter grading.

GRADING

- Final course score will be computed by the maximum of the following two schemes:

    Scheme 1: Homworks (25%) + Midterm (30%) + Final (45%)

    Scheme 2: Homworks (30%) + Final (70%)

- All grades will be posted on Gradescope. The final course grade will be posed on MyUCLA.

HOMEWORK

- Homeworks will be assigned weekly on every Wednesdays on Gradescope, and are due at the beginning of the class on the following Wednesday. Submit as a PDF file on Gradescope.
- No late homework will be accepted.
- Two lowest homework scores will be dropped.
- A random sample of problems will be graded by the TA.
- Solutions on some selected problems will be posted on the course website.
- Discussing homework problems with the instructor, TA, or classmates are encouraged. But you need to write your own solution with your own understanding.

EXAMS

- There is one midterm and one final exam. (Both are open book, take-home tests)

    Midterm: Monday, 2/8.

    (Exam will be uploaded on Gradescope at 9AM. Submit a PDF scan on Gradescope by 9AM the following day.)

    Final: Thursday, 3/18.

    (Exam will be uploaded to Gradescope at 9AM. The dealind for submission is Sunday, 3/20 9AM and the exam will expire after 24 hours once you open it. Submit a PDF scan of your solution on Gradescope.)

- There is no make-up exam. You should attend the final exam to pass the course.

TENTATIVE COURSE SCHEDULE

Below is a tentative course schedule based on the departmental guideline. There could be a slight change depending on our progress.

Week	Date	Section	Topics
1	M 1/4	6.1	Descriptive Statistics
	W 1/6	6.2	Exploratory Data Analysis
	F 1/8	6.3	Order Statistics
2	M 1/11	6.4	Maximum Likelihood Estimation
	W 1/13	6.4	Maximum Likelyhood Estimation
	F 1/15	6.5	A Simple Regression Problem
3	M 1/18		No class (Martin Luther King. Jr. holiday)
	W 1/20	6.7	Sufficient Statistics
	F 1/22	6.8	Bayesian Estimation
4	M 1/25	6.8	Bayesian Estimation
	W 1/27	6.8	Bayesian Estimation
	F 1/29	7.1	Confidence Interval for Means
5	M 2/1	7.2	Confidence Intervals for the Difference of Two Means
	W 2/3	7.3	Confidence Interval for Proportions
	F 2/5	7.4	Sample Size
6	M 2/8		**Midterm**
	W 2/10	7.5	Distribution-Free Confidence Intervals for Percentiles
	F 2/12	8.1	Tests About One Mean
7	M 2/15	7.5	No class (Presidents' Day holiday)
	W 2/17	8.1	Tests About One Mean
	F 2/19	8.2	Tests of the Equality of Two means
8	M 2/22	8.3	Tests About Proportions
	W 2/24	8.4	The Wilcoxon Tests
	F 2/26	8.5	Power of a Statistical Test
9	M 3/1	8.6	Best Critical Regions
	W 3/3	8.7	Likelihood Ratio Test
	F 3/5	8.7	Likelihood Ratio Test
10	M 3/8	9.1	Chi-Square Goodness-of-Fit Test
	W 3/10	9.2	Contingency Tables
	F 3/12		Review
11	Thr 3/18		**Final**