Syllabus for Mathematical Statistics 2
Fall 2019

Lecturer: Jungsoon Choi (E-mail: jungsoonchoi@hanyang.ac.kr, Tel: 02-2220-2621)
Course Schedule: 13:00-14:30 Tuesday and Thursday

Course Description

The main goal of the course is to introduce the statistical estimation and testing. This course covers Central Limit Theorem, Point Estimation and Confidence Intervals, and Statistical Testing in several situations. It also includes simple Linear Regression problems. In this course, a strong background for theoretical statistics will be provided.

Prerequisites: Principles of Statistics (MAT2022) or basic statistical course, Calculus I/II, Advanced Calculus I/II, and Mathematical Statistics 1 (MAT3022)

Textbook

Probability and Statistical Inference, global edition (9^{th} edition). Hogg and Tanis. Pearson. 2015.

Reference book

Introduction to Mathematical Statistics. Hogg and Craig. Pearson.

Grading

Midterm 35%, Final 40%, Quiz 15%, Homework 5%, Attendance 5%

* F score is given if a student misses the class over 10 times or misses one of the exams.

Weekly Plan

Week	Topics
1	Review of Mathematical Statistics 1
2	Ch5. Distributions of functions of Random Variables - Several Random Variables, Moment-Generating Function Technique
3	Ch5. Distributions of functions of Random Variables - Random Functions Associated with Normal Distribution, Central Limit Theorem
4	Ch5. Distributions of functions of Random Variables - Approximations for Discrete Distributions, Chebyshev's inequality
5	Ch6. Estimation - Order Statistics
6	Ch6. Estimation - Point Estimation (MLE) (UE and MOM)
7	Ch6. Estimation - Point Estimation (UE and MOM)
8	Ch6. Estimation - Asymptotic Distributions of MLE, Sufficient Statistics
9	Midterm (at classroom #751 on October 29th, 12:30-14:30)
10	Ch7. Interval Estimation - Confidence Intervals for Means and the Difference of Two Means
11	Ch8. Tests of Statistical Hypotheses - Introduction and One Mean
12	Ch8. Tests of Statistical Hypotheses - Two Means and Test About Proportions
13	Ch8. Tests of Statistical Hypotheses - Best Critical Regions
14	Ch8. Tests of Statistical Hypotheses - Likelihood Ratio Tests
15	Ch6. Estimation - A Simple Regression Problem
16	Final exam (at classroom #751 on December 17th, 12:00-14:30)