Syllabus for Mathematical Statistics 1 (MAT3022)
Spring 2019

Lecturer: Jungsoon Choi (E-mail: jungsoonchoi@hanyang.ac.kr, Tel: 02-2220-2621)

Course Description

The goal of the course is to introduce probability and statistics and understand basic concepts of probability, random variables, and some common distributions. This course provides an introduction to probability and statistics. It covers probability, random variables, common discrete and continuous distributions, and functions of random variables. In this course, a strong background for theoretical statistics will be provided.

Prerequisites: Principles of Statistics (MAT2022), Calculus I/II, and Advanced Calculus I/II

Textbook

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

Reference book

Introduction to Mathematical Statistics, 8th edition. Hogg and Craig. Pearson. 2013.
John E. Freund's Mathematical Statistics with applications, 8th edition. Miller and Miller. Pearson. 2013.

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 exam.

Weekly Plan

Week	Topics
1	Ch1. Probability - Basic Concepts, Properties of Probability, Methods of Enumeration, Conditional Probability, Independent Events
2	Ch1. Probability - Bayes's Theorem; Ch2. Discrete Distribution - Random variables of the Discrete Type
3	Ch2. Discrete Distribution - Expectation, mean, variance, and Standard deviation, Bernoulli Trials and the Binomial Distribution
4	Ch2. Discrete Distribution - Moment-Generating Function
5	Ch2. Discrete Distribution - Poisson Distribution
6	Ch3. Continuous Distributions - Random variables of the continuous type, uniform distribution
7	Ch3. Continuous Distributions - exponential distribution, gamma and chi-square distribution
8	Ch3. Continuous Distributions - Normal distribution; Midterm (April 25th, 6PM-8PM)
9	Ch3. Continuous Distributions - Normal distribution
10	Ch4. Bivariate Distributions - Distributions of Two Random Variables, Correlation Coefficient
11	Ch4. Bivariate Distributions - Conditional Distributions, ivariate Normal Distribution
12	Ch5. Distributions of functions of Random Variables - Functions of One Random Variable
13	Ch5. Distributions of functions of Random Variables - Transformations of Two Random Variables
14	Ch5. Distributions of functions of Random Variables - Transformations of Two Random Variables
15	Ch5. Distributions of functions of Random Variables - Several random variables
16	**Final Exam** (June 18th, 6PM-8PM)