Engineering Statistics–I

IE-2400210, SPRING 2023

Mon/Wed 9:00–10:15 (Sec. 066)

Instructor Chanseok Park (e-mail: CP<AT>PUSAN<DOT>AC<DOT>KR)
OFFICE: Engineering Building 207–10527
OFFICE HOURS: 12:00–13:00 (M/W); or by appointment.

Textbook *Probability and Statistical Inference* by Hogg, Tanis, and Zimmerman. Pearson, 9th edition (2014).

Web Page https://AppliedStat.GitHub.io/class

Software *R Language* (http://www.r-project.org).
Maple (http://www.maplesoft.com).

Prerequisite The expectation is that you have already been exposed to the basic probability and statistics.

Description and Learning Objectives

− Engineering Statistics–I course will focus on basic concepts and theories of probability and their applications.

− Topics covered in this class include basic distribution theories and various probability distributions such as binomial, negative binomial, Poisson, exponential, normal, bivariate, etc.

− We will also study various limit and approximation techniques widely used for probability and statistics.

− The popular R statistical language will be handled in this class.

Upon successful completion of this course, a student will be able to:

• Understand basic concepts on probability theories.

• Obtain basics on discrete and continuous distributions.

• Obtain conditional distributions.

• Obtain bivariate distributions.

• Obtain various approximation technique.

Grading The final grade will be curved and calculated as follows.

HOMEWORKS:	5%
ATTENDANCE:	5% (will be checked at random and count 3 points)
MIDTERM:	45%
FINAL:	45%

Rough Grading Guide:

- A+: 95 ∼ 100   A: 90 ∼ 95-
- B+: 85 ∼ 90-   B: 80 ∼ 85-
- C+: 70 ∼ 80-   C: 60 ∼ 70-
- D+: 50 ∼ 60-   D: 40 ∼ 50-
- F : below 40.

Exams

MIDTERM: T.B.A.   In class
FINAL: T.B.A.   In class

- All the exams are closed-book and in class.
- The final exam will be comprehensive.
- During the exams, a basic calculator will be permitted but cannot be shared with others.
- Calculators in smart phones, tablet PC and laptops are **not** allowed.
- No early or late exams will be allowed without a written and legitimate excuse.

Homeworks

- The students can collaborate on their homework problems, but they should submit their homeworks separately.
- Late homeworks will **not** be accepted.
- Up to 1 ∼ 3 problems, selected at random, will be graded in detail, on a scale of 0–5 each.
- To get full credit, you must show all work on the homework problems, which must be submitted in the same order as they are assigned.

Tentative Schedules

1. Basic probability theories.
2. Various discrete distributions such as binomial, negative binomial, Poisson, etc.
3. Various continuous distributions such as exponential, normal, etc.
4. Basics on discrete bivariate distributions.
5. Correlation coefficient.
6. Conditional distributions.
7. Basics on continuous bivariate distributions.
8. Bivariate normal distribution.
9. Functions of one random variable.
10. Functions of two random variables.
11. Moment-generating function technique.
12. Central limit theorem.
13. Approximations for discrete distributions.
14. Various inequalities useful for statistics.
15. Limit of moment-generating functions.
16. Final Exam.