



FENG CHIA UNIVERSITY

Probability and Statistics

TBA, Summer 2019 (May 13 - Jun. 14)

Lecturer: TBA

E-mail: TBA

Time: Monday through Friday

Contact hours: 60 (50 minutes each)

Credits: 4

Office hours: 2 hours (according to the teaching schedule)

Course Description

Probability and Statistics constitute the mathematics of uncertainty. This is an introductory course that gives the students' knowledge on both descriptive and inferential statistics. Topics include graphic and numerical representations of various types of data; probability and statistics, discrete and continuous probability distributions; sampling and estimations; statistical inferences.

Required Textbook

Introduction to Probability and Statistics, 13th Edition by William; Beaver, Robert J.; Beaver, Barbara M. Mendenhall (2006).

Course Hours

The course has 25 sessions in total. Each class session is 120 minutes in length. The course meets from Monday to Friday.

Course Schedule

Week 1: Describing data and basic probabilities

- Discrete and Continuous variables, bivariate data
- Describing data with graph and numerical measures
- Basic probability

Week 2: Expectation, probability distributions

- Discrete/absolutely continuous expectations, conditional expectation
- Variance, covariance, correlation, generating functions
- Bayes' rule
- Binomial, Poisson, Hypergeometric probability distribution
- Normal distribution

Week 3: More on normal distribution, Sampling distributions and limit theorems

- Distribution approximation
- Sampling distributions,
- The law of large numbers, the central limit theory

Week 4: Large-sample estimation, test of hypotheses

- Point, interval and difference estimations
- Likelihood function, maximum likelihood estimation,
- Testing hypotheses and P-values
- Sample-size calculations
- Prior and posterior distributions, inferences based on the posterior

Week 5: Statistical inferences from small samples

- Student's t distribution
- Small sample inferences

Grading Policy

Midterm is worth 30% of the final course grade, the homework is worth 30%, and the final exam is worth 40%.

Course Assistants:

The CA will run a weekly one-hour problem session on the relevant material. You are invited to attend as many of these problem sessions as you like. Their times and locations will be announced in the first class.

Homework:

There will be an assignment due at the beginning of each class covering the material from the previous day and introducing some of the material from the day on which it is due. No late homework will be accepted, except for the last one. You are encouraged to make sure of the following resources: your classmates, course assistants and the textbook. When you work in a team, you should write down all people's name in your term.

Exams:

There will be one midterm and one final exam. No calculators or notes may be brought into the exams. The times will be posted or announced later. If you must miss a midterm exam because of an approved conflict, please contact me as soon as possible, and no later than one week before the exam.

Grading Scale

Letter Grade	Score
A	80-100
B	70-79
C	60-69
D	50-59
E	Below 50

Academic Honesty

Feng Chia University defines academic misconduct as any act by a student that misrepresents the student's own academic work or that compromises the academic work of another. Scholastic misconduct includes (but is not limited to) cheating on assignments or examinations; plagiarizing, i.e., misrepresenting as one's own work any work done by another; submitting the same paper, or a substantially similar paper, to meet the requirements of more than one course without the

approval and consent of the instructors concerned; or sabotaging another's work within these general definitions. Instructors, however, determine what constitutes academic misconduct in the courses they teach. Students found guilty of academic misconduct in any portion of the academic work face penalties that range from the lowering of their course grade to awarding a grade of F for the entire course.