

Probability and Statistics for Engineers and Scientists

Course Syllabus: Fall 2021

Lecture hours and location:

8:15-11:00, Monday, Teaching building 1 B303

13:50-16:25, Monday, Zonghe building C303

Instructor: Dr. Shiquan Zhang

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Office Hours: Monday 12:00 -13:30

Text: Walpole, Myers, Myers and Ye, “Probability and Statistics for Engineers and Scientists”, Ninth Edition

Teaching Assistant: Enzhi Ren

Course Description:

This course is designed for students majoring in engineering. Topics include: data analysis, probability, random variables, discrete and continuous probability distributions, estimation and hypothesis testing, introduction to linear regression and analysis of variance.

Objectives include:

- To provide an understanding of why good statistics are critical to effective decision making.

- To acquaint the students with the fundamental concepts of probability and statistics.
- To provide an understanding of the processes by which real-life statistical problems are analyzed.
- To develop an understanding of the role of statistics in engineering.
- To familiarize students with computer-based statistical analysis through available software packages.

Applicable ABET Outcomes:

- An ability to apply knowledge of mathematics, science and engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to identify, formulate and solve engineering problems
- An ability to function on multi-disciplinary teams
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering

Lectures: This course will be taught in the regular mode. The regular classroom approach will be discussed during the first lecture in detail.

Homework: Homework problems will be assigned each week and are due in recitation the following week. Late homework is not accepted and homework not turned in will receive a score of 0. All work (computer and manual) should be shown for each problem so that partial credit may be given.

Class Conduct: Please turn off your phones prior to the beginning of class. If you feel the need to text or check your email during class, kindly leave the room.

Re-Grades: If you feel there has been an error in grading an assignment, you have **one week** from the day it was returned in class to submit it for a re-grade. When you resubmit the assignment, it must be accompanied by a written explanation of the potential grading mistake.

In Class Work /Class Exercises: There will be in class exercises assigned; if you are not in class you will be given a score of 0. These exercises will count as extra quiz credit. It will be possible to have quiz average over 100%.

Quizzes: Several random quizzes will be assigned in class. If you miss a quiz, you will be given a score of 0.

Exams: There will be a final exam after the whole course. Everybody should take this exam except under extenuating circumstances.

Cheating of any form on quizzes or exams will result in a grade of 0 for that quiz or exam.

Grading: Continuous assessment: 40%

Final exam: 60%

Final letter grades will be assigned as follows:

A 93-100% C+ 77-79.9% D- 60-62.9%

A- 90-92.9% C 73-76.9% F Below 60%

B+ 87-89.9% C- 70-72.9%

B 83-86.9% D+ 67-69.9%

B- 80-82.9% D 63-66.9%

TENTATIVE SCHEDULE

Lecture Topics Homework

Week 1 Ch. 1 Introduction and Descriptive Statistics/Ch.2 Random Experiments, Sample Spaces and Events

Week 2 Ch. 2 Basic Conception and Computation rule of Probability

Week 3 Ch. 2 Conditional Probability, Total rule and Bayes rule

Week 4 Ch.2 Independency

Week 5-6 Ch. 3 Random Variables and Probability Distributions

Week 7-8 Ch. 4 Mathematical Expectation

Week 9 Ch. 5 Some Discrete Probability Distributions

Week 10-11 Ch. 6 Some Continuous Probability Distributions

Week 12 Ch.7 Functions of Random Variable

Week 13 Ch. 8 Sampling

Week 14-16 Ch. 9 One and Two Sample Estimation

Week 17 **Final Exam**