IE 1070: Probability, Random Variables, and Distributions
Course Syllabus: Fall 2022

Class:

Section 1
Time: Monday 8:15 AM -11:00 AM
Location: 3-103
Section 2
Time: Monday 1:50 PM -4:25 PM
Location: 3-103

Instructor:

Rong Yin, Ph.D.
Email: rong.yin@scupi.cn (Email is the best way to reach me)
Office: 4-219

TAs:

Section 1
Ke Xu
Email: 2020141520154@stu.scu.edu.cn
Section 2
Yifan Chen
Email: chenyifan2526@stu.scu.edu.cn

Office hours:

Instructor:

- Right after each class in the classroom or online meeting room.
- Section 1: Thursday 8:30 AM - 11:30 AM, and/or by appointment.
- Section 2: Thursday 1:30 PM - 4:30 PM, and/or by appointment.

TAs:

- TBD and by appointment
- Online via QQ Group or Tencent Meeting

Credit Hours: 3

Notes:

- This syllabus is subject to change. Please follow updates announced during class and posted on Blackboard website. Lecture slides, reading assignments, course grades and announcements will also be provided through Blackboard.
- When emailing the instructor or TAs, please include "IE 1070" in the subject field of your message. Please use your university email account (student_ID_number@stu.scu.edu.cn), since emails from other accounts might be stopped by the SCU spam filter. Thanks!

Website:

- Blackboard
- Tencent Meeting for online lectures if necessary

Course Description:

This course is designed to introduce the fundamental concepts of probability and their common applications in engineering. To prepare students for the application of these concepts in IE courses such as IE 1071, IE 1081, IE 1083, and technique selective: Quality Control and Six Sigma.

Course Objectives:

- To introduce the fundamental concepts of probability and statistics and their usage in decision making under uncertainty.
- To provide practical experience in applying statistic principles in engineering problems.

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 practice

Textbook:

Walpole R. E. Myers R. H. Myers S. L. & Ye K. (2012). *Probability & statistics for engineers & scientists* (9th ed.). Prentice Hall.

Assessments:

The course grade will be determined as follows:

- In-class quiz: 10%
- Homework: 30%
- Midterm exam: 30%
- Final Exam: 30%

Grades:

Letter grades will be given as follows:

90.00 – 100.00 A	85.00 – 89.99 A-	80.00 – 84.99 B+	76.00 – 79.99 B	73.00 – 75.99 B-
70.00 – 72.99 C+	66.00 – 69.99 C	63.00 – 65.99 C-	60.00 – 62.99 D	0.00 – 59.99 F

Homework:

Homework will be assigned regularly and are due at the start of the next class. All work will be submitted electronically through the Blackboard. Late submission will **NOT** be accepted. Students are responsible for correctly submitting the homework through Blackboard.

If you have any problems about your grades, please discuss the issues with your TA within **ONE week** from the grades are given.

Please show all your work to receive full credit. You may lose points (or even receive **ZERO**) if you lose key process in solving the homework questions. However, you may also receive partial credit even if your final solution was wrong.

Exams:

There will be one midterm exam at the middle of this semester and one final exam at the end of this semester. The exams will be **closed book and closed notes**. However, students are allowed to bring one A4 page sheet and it must be **hand-written on two sides** of the paper. If you have to miss an exam, you **MUST** inform the instructor **before** the exam is given. If you miss an exam without prior notification, you will receive a score of "**ZERO**" for that exam except under extenuating circumstances.

Class Policy:

Class attendance is expected and important for your success in this course. Not keeping up with the course will hurt your grade in a general way. Important dates and plans will be announced during class. Each student is responsible for all assigned work in class and for maintaining awareness of all announcements posted to Blackboard and all e-mails sent to his or her SCU e-mail address.

You are free in this course to discuss any aspect of the homework with anyone, such as your classmates, your friends, and your TAs, but the written responses must be your own. Academic dishonesty will not be tolerated.

Course Topics

No.	Topic	Chapters in Textbook
1	Introduction to statistics and data analysis; Probability	Chapters 1& 2
2	Random Variables and Probability Distributions	Chapter 3
3	Mathematical Expectation	Chapter 4
4	Some Discrete Probability Distributions	Chapter 5
5	Some Continuous Probability Distributions	Chapter 6
6	Functions of Random Variables	Chapter 7
7	Sampling	Chapter 8
8	One- and Two-Sample Estimation Problems	Chapter 9