IE 1070: Probability, Random Variables, and Distributions
Course Syllabus: Fall 2024

Class:

Section 3
Time: Wednesday 8:15 AM -11:00 AM
Location: 3-102
Liberal Art Building, Jiang'an Campus

Instructor:

Rong Yin, Ph.D.
Email: rong.yin@scupi.cn (Email is the best way to reach me)
Office: North Zone 416
SCUPI new Building, Jiang'an South Campus

TAs:

Section 3
Ms. Yitian Luo (罗伊甜)
Email: 2022141520100@stu.scu.edu.cn

Office hours:

Instructor:
- Right after each class in the classroom
- Section 3: Thursday 8:30 AM - 11:30 AM

TA:
- 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:

- Random In-class quiz: 10%
- Homework: 20%
- Midterm exam: 30%
- Final Exam: 40%

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. Any arguments about, for example, your first homework grades at the end of the semester will **NOT** be available.

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:

** This is subject to change, check updated announcements in class and on BB.
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.

Make-up exam Policy

Make-up exam grading is intended solely to replace your final exam grade. If students pass the course after taking the make-up exam, their final grade will be recorded simply as passing. According to university policy, typically, missing an exam will result in losing the opportunity for a make-up exam.

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. Valid excuses for absence may be accepted **before** class. 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. It is the students' responsibility to obtain all class materials (e.g., handouts). **Video/audio recording** is **strictly prohibited** during class to maintain a free discussion atmosphere. Please silence your cell phones to prevent disturbing your classmates in class.

You are free in this course to discuss any aspect of the homework with anyone, such as your classmates and your friends, but the written responses must be your own. **Please be aware that all your submissions will go through tools for plagiarism issues**. Academic dishonesty will not be tolerated.

Academic honesty:

Students are responsible for mastering all course material, including both graded and ungraded assignments posted on Blackboard. Work submitted for grading—such as homework, lab reports, design projects, and tests—should represent your individual effort. Studying and collaborating with peers on assignments outside of class is not only acceptable but also highly encouraged. Forming study groups can provide significant benefits, and you are encouraged to participate in them.

However, submitting work copied from others is considered academic misconduct. This includes plagiarism of ideas or work and the unauthorized exchange of information during examinations. All instances of academic misconduct will be addressed strictly and may result in a failing grade for the course. For full details on your rights and responsibilities, refer to the school's policy and the student handbook.

Violations include, but are not limited to:
- Cheating on an examination, such as copying from another's paper, using unauthorized notes or calculators, or giving or receiving unauthorized assistance, including trading examinations, whispering answers, passing notes, or using electronic devices to transmit or receive information (e.g., copying another student's Word, PowerPoint, or Excel assignments).
- Violation of proctor guidelines and compromising the "chain of custody" by copying or sharing exam questions before or after an exam is considered cheating and may result in failure of the course.

Plagiarism:
- Plagiarism involves using someone else's work without proper attribution. This includes using ideas, phrases, papers, laboratory reports, computer programs, or data—whether copied verbatim or paraphrased—that you did not originate. Sources can include published works such as books, movies, websites, and unpublished works like other students' papers or material from research services. In short, presenting someone else's work as your own is academically dishonest. To avoid plagiarism, clearly indicate the source of any major or unique idea or wording that you did not create, either through footnotes or within the text itself. Sources must always be cited, whether the material is quoted directly or paraphrased.

Unauthorized Collaboration:
Unauthorized collaboration involves working with or receiving help from others on graded assignments without the specific approval of the instructor. If unsure, seek permission from the instructor before collaborating. Students are encouraged to learn from one another: form study groups and discuss assignments. However, each assignment must be individual work unless specifically stated and submitted as a group assignment.

- Copying another student's assignment and submitting it as your own is plagiarism.
- You are encouraged to discuss your assignments with one another, but all assignments must be completed individually unless explicitly designated as a "team" assignment.

Tentative 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