IE 1071: Statistical Testing and Regression: Spring 2023

Class:

Section 1
Time: Monday 8:15 -11:00
Location: 3-101
Section 2
Time: Thursday 15:40-18:25
Location: 3-101

Instructor:

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

TAs:

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

Office hours:

Instructor:

- Right after each class in the classroom.
- Monday 12:30 - 17:30.
- Wednesday 13:30 - 14:30.

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 1071" 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:

Following IE 1070, this course is designed to introduce the fundamental concepts of probability, statistical testing, and their common applications in engineering. To prepare students for the application of these concepts in IE courses such as IE 1081, IE 1083, and technique selective: Quality Management and Six Sigma.

Course Objectives:

- To introduce the fundamental concepts of probability and statistics and their usage in decision making under uncertainty.
- To learn how to interpret data and understand statistical inference.
- 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, activities, and attendance: 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

In-class quiz:

Random quizzes will be given during classes. You will **NOT** receive grades for quizzes that you did not attend.

Homework:

Homework will be assigned regularly and are generally 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. Please make sure your TA can clearly see your submitted files. Generally, pdf files are preferred. Please include your name and student ID when submitting your homework.

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. Printed materials are **NOT** allowed. 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. More details about the exam schedule and requirements will be covered in class. Early preparation for your exams is strongly recommended. For IE students, a make-up exam may be given if you fail this course. However, per the organizational policy, the make-up exam grades will not be higher than D if you fail the course.

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 will 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 recording is 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, 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	Sampling	Chapter 8
2	One- and Two-Sample Estimation Problems	Chapter 9
3	One- and Two-Sample Hypotheses Test	Chapter 10
4	Linear Regression	Chapter 11
5	Multiple Linear Regression	Chapter 12
6	One-Factor Experiment	Chapter 13
7	Two-way ANOVA	Chapter 14
8	Nonparametric statistics	Chapter 16