Stat-4110 Statistical Methods for Process Development and Control Spring 2025

Instructor: M. Yaseen

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Office: Martin Hall Room E-3A

Class Hours: 12:30PM - 01:45PM, TR, Martin Hall Room M-103

Office Hours: 01:45PM - 02:45PM, TR

TA: Dulshan Malshika (dmalshi@clemson.edu)

Texts: Montgomery, D. C., Runger, G. C., & Hubele, N. F. (2014). *Engineering statistics*. Wiley.

Course Description: Experimental design techniques for use in process development, application of screening experiments and response surface experiments, techniques for process control with implications for product quality control. Includes discussions of the use of statistical computer analyses and interpretations including computer-generated graphics. **Preq: MATH 2060**.

Course Objectives: (a) Students will be able to analyze and understand the statistical questions and situations that arise in both the workplace and daily life. (b) Students will be able to interpret the output from a statistical software package. (c) Students will be able to communicate results of a statistical analysis.

Attendance: College work proceeds at such a pace that regular attendance is necessary for each student to obtain maximum benefits for instruction. Regular and punctual attendance at all class sessions is a student obligation, and each student is responsible for all the work, including test and written work, in all class sessions. Should the professor be late for class, students are required to wait fifteen minutes before leaving.

Evaluation:

Homework/Quizzes:	10%
Exam 1:	20%
Exam 2:	20%
Exam 3:	20%
Final Exam:	30%

The Final Exam will be cumulative.

Letter Grades: **A**: >= 90.00; **A-**: 88.00 ~ 89.99; **B+**: 85.00 ~ 87.99; **B**: 80.00 ~ 84.99; **B-**: 78.00 ~ 79.99; **C+**: 75.00 ~ 77.99; **C**: 70.00 ~ 74.99; **C-**: 68.00 ~ 69.99; **F**: <= 67.99

Anticipated Exam Dates:

Exam 1:	Thursday, February 06, 2025, 12:30PM - 01:45PM
Exam 2:	Thursday, March 06, 2025, 12:30PM - 01:45PM
Exam 3:	Tuedsay, April 08, 2025, 12:30PM - 01:45PM
Final Exam:	Monday, April 28, 2025, 03:00PM - 05:30PM

Academic Integrity: As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning.' Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

Accessibility: Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the instructor know and are encouraged to request accommodations through SAS (Student Accessibility Services) as soon as possible. To request accommodations through SAS, please see this link: (https://www.clemson.edu/academics/studentaccess/register.html). You can also reach out to SAS with questions by calling 864-656-6848, visiting SAS at the ASC Suite 239, or stopping by the office as a drop-in appointment.

Title IX Statement: Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This Title IX policy is located on the Access and Equity website. Ms. Alesia Smith is the Clemson University Title IX Coordinator, and the Assistant Vice President of Equity Compliance. Her office is located at 223 Brackett Hall, 864-656-3181 and her email address is alesias@clemson.edu. Remember, email is not a fully secured method of communication and should not be used to discuss Title IX issues. *Clemson University aspires to create a diverse community that welcomes people of different races, cultures, ages, genders, sexual orientation, religions, socioeconomic levels, political perspectives, abilities, opinions, values and experiences*.

Inclement Weather: Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting unless contacted by the instructor. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless contacted by the instructor. Any extension or postponement of assignments or exams must be granted by the instructor via email or Canvas within 24 hours of the weather related cancellation.

Course Modality: Class meetings and office hours will be in person. In the event of instructor illness or university mandated move to virtual learning, lectures will be delivered using a synchronous online format and exams will be conducted online.

Tentative Course Schedule

Week	Date	Topic	Reading
01	2025-01-09	The Role of Statistics in Engineering	Ch. 01
02	2025-01-14	The Role of Statistics in Engineering	Ch. 01
02	2025-01-16	Data Summary and Presentation	Ch. 02
03	2025-01-21	Data Summary and Presentation	Ch. 02
03	2025-01-23	Random Variables and Probability Distributions	Ch. 03
04	2025-01-28	Random Variables and Probability Distributions	Ch. 03
04	2025-01-30	Random Variables and Probability Distributions	Ch. 03
05	2025-02-04	Random Variables and Probability Distributions	Ch. 03
05	**2025-02-06**	**Exam 1**	
06	2025-02-11	Decision Making for a Single Sample	Ch. 04
06	2025-02-13	Decision Making for a Single Sample	Ch. 04
07	2025-02-18	Decision Making for a Single Sample	Ch. 04
07	2025-02-20	Decision Making for a Single Sample	Ch. 04
08	2025-02-25	Decision Making for Two Samples	Ch. 05
08	2025-02-27	Decision Making for Two Samples	Ch. 05
09	2025-03-04	Decision Making for Two Samples	Ch. 05
09	**2025-03-06**	**Exam 2**	
10	2025-03-11	Decision Making for Two or More Samples (ANOVA)	Ch. 05
10	2025-03-13	Decision Making for Two or More Samples (ANOVA)	Ch. 05
11	**2025-03-18**	**Spring Break**	
11	**2025-03-20**	**Spring Break**	
12	2025-03-25	Decision Making for Two or More Samples (ANOVA)	Ch. 05
12	2025-03-27	Linear Regression	Ch. 06
13	2025-04-01	Linear Regression	Ch. 06
13	2025-04-03	Linear Regression	Ch. 06
14	**2025-04-08**	**Exam 3**	
14	2025-04-10	Linear Regression	Ch. 06
15	2025-04-15	Linear Regression	Ch. 06
15	2025-04-17	Statistical Process Control	Ch. 08
16	2025-04-22	Statistical Process Control	Ch. 08
16	2025-04-24	Review	
Final Exam (Monday, April 28, 2025, 03:00PM - 05:30PM)			