

INSY 7300/7300-D01 – Advanced Engineering Statistics – Fall 2021

Course: INSY 7300/7306, Advanced Engineering Statistics

Department: Industrial and Systems Engineering

Credit Hours: 3.0

Designation: ISE graduate core

Prerequisites: A course in probability and statistics

- Instructor:** Dr. Sean Gallagher, 3323C Shelby Center, seangallagher@auburn.edu
Office hours: By appointment, Zoom ID: 9468546907
- Teaching Assistant:** Yuting Ma, Email: yzm0025@auburn.edu
Hours: TBA
- Lecture Time:** Tuesday/Thursday: 12:30 pm - 1:45 pm, 1122 Shelby
- Textbook:** Douglas C. Montgomery, Design and Analysis of Experiments 8th Edition, ISBN: 978-1118146927
- Course Description:** This is a basic course in designing experiments and analyzing the resulting data. The course deals with the types of experiments that are frequently conducted in industrial and laboratory settings. The objective is to learn how to plan, design and conduct experiments efficiently and effectively, and analyze the resulting data to obtain objective conclusions.
- Course Objectives:** Upon completion of the course, you will be able to:
 - Design and analyze single factor experiments
 - Design and analyze randomized block experiments
 - Design and analyze factorial and fractional factorial experiments

Course Requirements/Evaluation: You will be evaluated based on the following:

<i>Description</i>	<i>Date</i>	<i>Time</i>	<i>Room</i>	<i>Weight</i>
Exam 1 (chap. 1-3)	10/5/21	12:30-1:45 pm	Shelby 1122	30%
Exam 2 (chap. 4-6)	11/11/21	12:30-1:45 pm	Shelby 1122	35%
Exam 3 (chap. 1-8)	12/8/21	12:00-2:30 pm	Shelby 1122	35%

Grading Scale	
Letter Grade	Percentage
A	$\geq 90\%$
B	80-90%
C	70-79%
D	60-69%
F	$\leq 60\%$

Tests and Final Exam Guidelines:

- You are expected to take the tests at the scheduled time proctored by the ProctorU system
- Exceptions may be requested for medical or work-related reasons
- You will be allowed to use a simple calculator with NO statistical functions and NO wireless communication (continued...)

- You will be allowed to use a formula sheet (8 x11) written on both sides
- You will NOT be allowed to consult any textbook, your notes, or the web, only your formula sheet
- Round your calculations to 4 decimals

Disability Accommodations: Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting the first week of classes, or as soon as possible if accommodations are needed immediately. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT).

Topics and Schedule:

Week Topic

1. Ch1: Introduction to DOE
2. Ch2: Simple Comparative Experiments
3. Ch2: Simple Comparative Experiments
4. Ch3: Experiments with a Single Factor
5. Ch3: Experiments with a Single Factor
6. Ch3 and Review of chapters 1-2-3
7. **TEST 1** and Ch4: Introduction
8. Ch4: Randomized Blocks, Latin Square, and Related Designs
9. Ch5: Factorial Designs
10. Ch6: 2^k Factorial Designs
11. Ch7: Blocking and Confounding in the 2^k Factorial Design
12. Review of chapters 4-5-6 – **TEST 2**
13. 13 Ch7: Blocking and Confounding in the 2^k Factorial Design
14. 14 Ch8: Two Level Fractional Factorial Designs and Review of chapters 7-8
15. 15 **Makeup tests**
16. 16 **Final Exam (comprehensive, Chapters 1-8)**

Homework assignments (Not graded)

HW1-HW2-HW3-HW4 HW5-HW6-HW7-HW8

Health and Well-Being Resources:

Students with questions about COVID-related illnesses should reach out to the COVID Resource Center at (334) 844-6000 or at covidresourcecenter@auburn.edu.

If you need additional support, there are several resources on campus to assist you: • COVID Resource Center (covidresourcecenter@auburn.edu)

- Student Counseling and Psychological Services (<http://wp.auburn.edu/scs/>)
- AU Medical Clinic (<https://cws.auburn.edu/aumc/>)

If you or someone you know are experiencing food, housing or financial insecurity, please visit the Auburn Cares Office (<http://aucares.auburn.edu/>)

Academic Honesty

All portions of the Auburn University student academic honesty code (Title X11) found in the Tiger Cub will apply to this class. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee. Violations include, but are not limited to:

Cheating on an examination

This includes such things as copying from another's paper, using unauthorized notes, calculators, etc., or giving or receiving unauthorized aid, such as trading examinations, whispering answers, passing notes, or using electronic devices to transmit or receive information.

Plagiarism

This is using someone else's work without giving credit. It is, for example, using ideas, phrases, papers, laboratory reports, computer programs, data - copied directly or paraphrased - that you did not arrive at on your own. Sources include published works such as book, movies, web sites, and unpublished works such as other students' papers or material from a research service. In brief, representing someone else's work as your own is academically dishonest. *The risk of plagiarism can be avoided in written work by clearly indicating, either in footnotes or in the paper itself, the source of any major or unique idea or wording that you did not arrive at on your own. Sources must be given regardless of whether the material is quoted directly or paraphrased. Copying another student's assignment and putting your name on it is plagiarism.*

Unauthorized collaboration

This is working with or receiving help from others on graded assignments without the specific approval of the instructor. *If in doubt, seek permission from the instructor before working with others.* Students are encouraged to learn from one another: Form study groups and discuss assignments, but each assignment must be individual work unless specifically stated and turned in as a group assignment. *You are encouraged to talk to one another about your assignments, however, all assignments must be done by the student(s) whose name is (are) on it!* This means using the same work to fulfill the academic requirements in more than one course. *Prior permission of the instructors is essential.*

Contingency Plan: If I become ill before the semester ends, Dr. Jorge Valenzuela will take over under the same online asynchronous format. It will make no difference to you. If you become ill, you can watch the video-lectures and review sessions on CANVAS at your convenience. If you are unable to take a test, properly justified, you could take a make up on Nov 24th.

NOTE: Students are required to wear a mask when attending this class in person.

COVID-19 ALTERNATIVE OPERATIONS: If normal class activities are disrupted due to illness, emergency, or crisis (such as a COVID-19 outbreak), the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.