STA 3032 (Class Number: 17472)

Engineering Statistics

Spring 2022

MWF 12:50-1:40 p.m. (Room: LIT 0101)

The course is offered fully in person. You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

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Course Description: A survey of the basic concepts in probability and statistics with engineering applications. Topics include probability, discrete and continuous random variables, confidence interval estimation, hypothesis testing, correlation, and regression.

Prerequisite: MAC 2311.

Course Website: e-Learning. Check course website at least once a day for updates.

Course Material: Lecture notes (posted on course website) and in-class notes (will not be posted).

Required Text:

1. *Probability & Statistics for Engineers & Scientists* (9th ed.) by Walpole, Myers, Myers, and Ye.

Software: R (free statistical software).

Course Communication: Office hours and email.

- **Always wear a mask during in-person office hours.**

- **Always use GatorMail for email.** I do not check Canvas inbox.

- **Always put 3032 in the subject line of your email.** I teach multiple courses and use course numbers to search emails from students.

Course Objectives:

1. Access, manipulate, and analyze data using statistical software.

2. Produce appropriate graphs and descriptive statistics for one and two variables, for both categorical and continuous data.

3. Interpret graphs and descriptive statistics for one and two variables.

4. Know and apply the basic probability rules, the concepts of expected value and variance for discrete and continuous variables.

5. Know and apply the central limit theorem, which is crucial for inference.

6. Understand confidence intervals and hypothesis tests.

7. Carry out and interpret one-sample and two-sample analyses for means and proportions.

8. Carry out and interpret statistical modeling using simple linear regression.

Assignments and Grading:

- Grades will be based on the following components.

Homework	25%	
Exam 1	25%	in-class, February 9
Exam 2	25%	in-class, March 18
Exam 3	25%	in-class, April 20
Total	100%	

- I will strictly follow the cutoffs below for letter grades.

		A	≥ 92	A-	90 to < 92
B+	87 to < 90	B	82 to < 87	B-	80 to < 82
C+	77 to < 80	C	72 to < 77	C-	70 to < 72
D+	67 to < 70	D	62 to < 67	D-	60 to < 62
E	< 60				

- **No late homework will be accepted.** However, the lowest homework score will be dropped at the end of the semester.

- **All exams will be closed-book.** However, you may bring one letter-size (8.5 by 11 inches) cheat sheet (i.e., two pages) to each exam. You may bring your old cheat sheet(s) in addition to the current one.

- **Bring a scientific calculator (no cell phones!) to each exam.**

- **If you miss Exam $k, k = 1, 2, 3$, you will receive $10(9 - k)\%$ of the minimum of your other two exam scores for Exam k.** For example, suppose you missed Exam 3, where your homework, Exam 1, and Exam 2 scores are 100, 90, and 80, respectively. Then your Exam 3 score would be $80 \times 10(9 - 3)\% = 48$ and your final score would be

  $$100 \times 25\% + 90 \times 25\% + 80 \times 25\% + 48 \times 25\% = 79.5,$$

  which is a C+. **You will automatically fail the course if you miss more than one exam.**

- **If you take all three in-class exams, there will be 3% extra credit toward your final grade.** For example, if your homework, Exam 1, Exam 2, and Exam 3 scores are 100, 90, 80, and 70, respectively, your final score would be

  $$100 \times 25\% + 90 \times 25\% + 80 \times 25\% + 70 \times 25\% + 100 \times 3\% = 85 + 3 = 88,$$

  which is a B+.

Academic Integrity:
You may discuss homework with each other, but you must write up your solutions independently. You may never discuss exams with each other. You are held accountable to the UF Student Honor and Conduct Code.

Students with Disabilities:
Students requesting accommodation for disabilities must first register with the Disability Resource Center (DRC). The DRC will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

Course Evaluations:
Students are expected to provide feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at `https://gatorevals.aa.ufl.edu/students/`. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via `https://ufl.bluera.com/ufl/`. Summaries of course evaluation results are available to students at `https://gatorevals.aa.ufl.edu/public-results/`.

Tentative Course Outline

Week	Content	Text
1	Introduction	1.1-1.6
2	Sample Space, Events, and Probability	2.1-2.2, 2.4-2.5
	Conditional Probability and Independence	2.6-2.7
3	Random Variables and Probability Distributions	3.1-3.4, 4.1-4.4
4	Discrete Random Variables	5.1-5.5
5	Continuous Random Variables	6.1-6.4, 6.7
Exam 1		
6	Sampling Distributions and the Central Limit Theorem	8.3-8.7
7	Inference on Population Mean: Confidence Intervals	9.1-9.5
8	Inference on Population Mean: Hypothesis Tests	10.1-10.4
9	Inference on Population Proportion	9.10, 10.8
	Inference on Population Variance	9.12, 10.10
Exam 2		
11	Inference on Two Population Means: Confidence Intervals	9.8-9.9
	Inference on Two Population Means: Hypothesis Tests	10.5
12	Inference on Two Population Proportions	9.11, 10.9
	Inference on Two Population Variances	9.13, 10.10
13	Contingency Tables	10.11-10.13
14-15	Simple Linear Regression	11.1-11.6
Exam 3		