STA 3032 (Class Number: 25536)

Engineering Statistics

Fall 2022

MWF 10:40-11:30 a.m. (Room: NRN 1020)

The course is offered fully in person. Please feel free to wear a mask for your safety and the safety of others.

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.

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.

Prerequisite: MAC 2311 [1].

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

Course Material: Lecture notes (will be 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.

- Wear a mask during in-person office hours.

- Use GatorMail for email; otherwise, you may not hear back from me. I do not check Canvas inbox.

- Put 3032 in the subject line of your email; otherwise, you may not hear back from me. I teach multiple courses and use course numbers to search emails from students.

- Allow me 24 hours to reply to your email.

- Email is not ideal for content questions. Ask them in person (e.g., in class, office hours, etc.).

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[1]Calculus beyond MAC 2311 (e.g., integration by parts) may be needed and discussed. Note that this is a statistics course and calculus is essential part of statistics.

Assignments and Grading:

- Grades will be based on the following components.

Homework	25%	
Exam 1	25%	in-class, September 28
Exam 2	25%	in-class, November 2
Exam 3	25%	in-class, December 7
Total	100%	

- The following cutoffs will be applied strictly (i.e., no rounding up) 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				

Course Policies:

- Attendance is not mandatory. However, it is your responsibility if you miss any information provided in class.

- **You will be given sufficient time for each assignment and no late homework will be accepted. Note that a due date is the last day you can submit your assignment, not the day you should submit your assignment.** It is fine if you decide to submit your assignment at a later time on or before the due date, but that means you are taking more risks and it is your responsibility if you fail to meet the deadline. For example, it is your responsibility if you could not submit your assignment due to an outage (e.g., power, Internet, etc.) in the due date evening.

- The lowest homework score will be dropped at the end of the semester.

- Once graded and announced, your homework/exam can be reviewed by the grader only if a request is made within a week.

- 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.

- A make-up exam can only be given if you are seriously sick or injured, which must be appropriately documented (e.g., doctor's note) and submitted at least 24 hours before the original exam.

- I reserve the right to approve or reject a make-up request and you cannot be approved more than one make-up exam. If approved, you must visit me in person within a week of the original exam to take the make-up exam. You are responsible for scheduling.

- A make-up exam will be different (likely harder) from the original exam and the score is not eligible for an adjustment/curve.

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, 4.1-4.3
4	Some Discrete Probability Distributions	5.1-5.2, 5.4
5	Some Continuous Probability Distributions	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		