STA 3032: Engineering Statistics

Fall 2023

Instructor

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Office Hours: 2:00 pm - 3:00 pm MWF
Office: FLO 101A

Class information

Classroom: CSE A101
Class Hours: 3:00 pm - 3:50 pm MWF

Teaching Assistants

Annabelle Lassiter
Email: alassiter1@ufl.edu
Office Hours: 11:00 am - 12:00 pm MWF
Office: FLO 234

Sofia Ivolgina
Email: sivolgina@ufl.edu
Office Hours: 10:00 am - 11:00 am Monday
Office: Zoom (link TBA)

Wangxing Zhang
Email: zhangwangxing@ufl.edu
Office Hours: TBA
Office: TBA

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 goals

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.

Grades

The grades will be determined according to the following scale:

Grade	Range
A	94-100
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	70-76
D	50-69
E	0-49

In total, there will be 3 tests and 8 homework assignments. The class will be weighted as follows:

Item	Weight
Homework	25 %
Exam 1	25 %
Exam 2	25 %
Exam 3	25 %

Attendance and Make-Ups

Attendance is expected and will be essential for performing well in the class. There is however, no attendance grade.

See university attendance policies:

https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Late homework will be graded with a 15% deduction per day late. More than 3 days late will receive a 0.

Textbook

The Textbook

Probability & Statistics for Engineers & Scientists, 9th Edition available via UF All Access. **Author(s)**: Walpole, Myers, Myers, Ye; **ISBN-13**: 978-0134115856

UF Grading Policies

https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Evaluations

Students are expected to provide professional and respectful 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/.

Recordings

This class is 100% in-person, there will be no recordings of the lectures.

Weekly Schedule

Here is a tentative weekly schedule for the class:

Week 1

- (no class Monday)
- Introduction (1.1-1.6)

Week 2

- Probability
  - Sample Space and Events (2.1-2.5)
  - Conditional Probability and Independence (2.6)
  - Bayes' Rule (2.7)
- Homework 1 Due

Week 3

- Random Variables and Probability Distributions (3.1-3.4, 4.1-4.4)

Week 4

- Discrete Distributions (5.1-5.5)
- Homework 2 Due

Week 5

- Continuous Distributions (6.1-6.8)
- Test Review
- **EXAM 1** on Friday

Week 6

- Sampling Distributions
- Central Limit Theorem (8.3-8.7)
- Homework 3 Due

Week 7

- (no class Friday)
- Confidence Intervals (9.1-9.5)

Week 8

- Confidence Intervals Continued (9.6, 9.8-9.13)
- Homework 4 Due

Week 9

- Intro to Hypothesis Testing (10.1 - 10.3)
- One Sample Tests (10.4)

Week 10

- Two Sample Tests (10.5)
- Types of Error
    - Level
    - Power
- More Tests (10.8-10.13)
- Test Review
- Homework 5 Due
- **EXAM 2** on Friday

Week 11

- Contingency Tables
- Chi-Squared Tests
- Signed-Rank and Rank-Sum Tests (16.1-16.3)

Week 12

- (no class Friday)
- Simple Linear Regression (11.1-11.8)
- ANOVA
- Homework 6 Due

Week 13

- Multiple Regression (12.1-12.6)
- Categorical Predictors (12.8-12.9)

Week 14

- (no class Wednesday or Friday)
- Correlation
- Homework 7 Due

Week 15

- Experiments
- Completely Randomized Design (13.1-13.3)
- Multiple Comparisons (13.6)

Week 16

- (no class Friday)
- Test Review
- Homework 8 Due
- **EXAM 3** on Wednesday

If this document is updated, an announcement will be made in class, and the new version will be uploaded to the course website in canvas.