STA 3032: Engineering Statistics

Fall 2023

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Teaching Assistants
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Class Information

Classroom: CSE A101
Meeting Times: 11:45-12:35 MWF

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

Grades will be based on the following scale:

Grade	Range
A	94-100
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-73
D+	67-69
D	63-66
D-	60-63
E	0-59

In total, there will be 3 exams and 8 homework assignments. The corresponding weights are:

Assignment	Weight
Exam 1	25%
Exam 2	25%
Exam 3	25%
Homework	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 here. 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 Course Outline

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

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

Week 13
- Multiple Regression (12.1-12.6)
- Categorical Predictors (12.8-12.9)

Week 14
- Correlation
- Homework 7 Due
- (no class Wednesday or Friday)

Week 15
- Experiments
- Completely Randomized Design (13.1-13.3)
- Multiple Comparisons (13.6)

Week 16
- Test Review
- Homework 7 Due
- EXAM 3 on Wednesday
- (no class Friday)

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.