

ISE 225 Engineering Statistics I

Spring Semester 2020

Mon, Wed 12:00-1:50pm

**Prerequisite:** ISE 220 Probability Concepts in Engineering

**Course Objective:**

This course will develop skills necessary for an engineer to

- Gather data from a population which is of interest for some question or experiment
- Describe and summarize features of the data
- Infer properties of a population using hypothesis tests, confidence intervals, and Analysis of Variance (ANOVA)
- Understand the basics of statistical learning
- Build and validate statistical models
- Use the R statistical software

**Instructor:**

Haomiao Jin, PhD

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Office Hour: TBD

**Textbook:**

(Required) R Witte and J Witte, *Statistics*, 11<sup>th</sup> edition

(Required) G James, D Witten, T Hastie, R Tibshirani, *An Introduction to Statistical Learning: with Applications in R*

**Homework:** Weekly

**Scoring:** Homework (25%), Class Project (25%), Mid-exam (25%), Final Exam (25%)

**Syllabus:**

Week	Topic	Text Sections
W1: Jan 13, 15 W2: Jan 22	Introduction, descriptive statistics	WW: Ch 1-5
W3: Jan 27, 29 W4: Feb 3, 5 W5: Feb 10, 12	Single sample analysis: Point estimation, Hypothesis testing, Confidence interval	WW: Ch 8-13
W6: Feb 19 W7: Feb 24, 26 W8: Mar 2, 4	Two-sample analysis, ANOVA	WW: Ch 14-17
W9: Mar 9 W9: Mar 11	Mid-exam review Mid-exam	
W10: Recess W11: Mar 23, 25	Basics of statistical learning	JWHT: Ch 1-2
W12: Mar 30, Apr 1	Linear regression	JWHT: Ch 3
W13: Apr 6, 8	Logistic regression and other classification techniques	JWHT: Ch 4
W14: Apr 13	Model validation	JWHT: Ch 5
W14: Apr 15 W15: Apr 20	Regularized regression	JWHT: Ch 6
W15: Apr 22 W16: Apr 27	Nonlinear techniques	JWHT: Ch7-9
Final exam review: Apr 29 Final exam: TBD		