

ISYE 3770 - Statistics and Applications

Catalog Description: Introduction to probability, probability distributions, point estimation, confidence intervals, hypothesis testing, linear regression, and analysis of variance. Cross-listed with MATH 3770 and CEE 3770.

Hours 3-0-3 (Lecture-Lab-Total Credit Hours)

Prerequisite(s): Math 2401 or 2411 or 24X1, CS 1316 or equivalent.

Text: W. W. Hines, D. C. Montgomery, D. Goldsman, and C. Borror, Probability and Statistics in Engineering, 4th Edition, 2003, John Wiley and Sons.

Objective: Provide an introduction to probability and statistics, emphasizing applications in science and engineering.

Evaluation of the important outcomes:

Three or more important outcomes will be evaluated from direct questions in the Final exam:

1. Students should be able to analyze and display sampling data, evaluate statistics, and estimate distribution parameters;
2. Students should be able to draw conclusions about population parameters from experimental data by using proper statistical techniques.
3. Students should be able to use proper statistical techniques (namely hypothesis testing) to draw sound statistical conclusions.

Topical Outline:

1. Probability Intro
2. Random Variables
3. Discrete Distributions
4. Continuous Distributions
5. Normal Distribution
6. Descriptive Statistics
7. Point Estimation
8. Confidence Intervals
9. Hypothesis Testing
10. Discrete Data Analysis
11. Analysis of Variance
12. Simple Linear Regression
13. Multiple Linear Regression
14. Experimental Design

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