IE 230 INTRODUCTION TO PROBABILITY AND STATISTICS

Spring 2018

Catalogue Description. Basic concepts of probability and random variables, which constitute the foundations of statistics. Discrete and continuous random variables, their distributions, and expectations. Random samples, statistics, and their distributions, estimation, hypothesis testing, inference about two populations, basic analysis of variance and simple linear regression.

Course Objectives. The goal of this course is to establish a good statistical background for students by introducing the basic probability and statistics concepts. The course also provides a good comprehensive introduction to probability and statistical analysis by explaining the practical implications of statistical formulae.

Course Outline:

- Introduction
- Numerical and graphical descriptive techniques
- Elements of probability
- Discrete random variables and their distributions
- Expectation of discrete random variables
- Continuous random variables and their distributions
- Expectation of continuous random variables
- Random samples, statistics and their distributions
- Estimation: Point and interval estimators
- Hypothesis testing
- Inference about two populations
- Analysis of variance; one way, two way
- Introduction to regression analysis and some applications

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Grading

HomeWorks	10 %
Midterm 1	25 %
Midterm 2	25 %
Final	40 %
Total:	**100 %**

Textbook:

- William Navidi (2015), Statistics for Engineers and Scientists, 4th edition, McGraw-Hill.
- Jay L. Devore (2008), Probability and Statistics for Engineering and the Sciences, 7th edition, Duxbury Pr.

Reference Books:

- D.C. Montgomery, G.C. Runger, and N. F. Hubele (2004), Engineering Statistics, 3rd eds., John Wiley & Sons, Inc: New York
- J. E. Freud (2006), Modern Elementary Statistics, 12th edition, Prentice Hall.
- E.K. Bowen and M. K. Starr (1982), Basic Statistics for Business and Economics, 3rd edition, McGraw-Hill.