

## IE 230 INTRODUCTION TO PROBABILITY AND STATISTICS (3 0 3 – 5 ECTS)

### Spring 2024 - Tentative Syllabus

**Course Description.** Basic concepts of probability and random variables which constitutes the basics of statistics. Discrete and continuous random variables and their distributions, expectation of discrete random variables. Random samples, statistics and their distributions, estimation, hypothesis testing, inference about two populations, analysis of variance, regression analysis.

**Prerequisite.** MCS 158 Calculus for Engineering II.

**Course Objectives.** The main aims of this course are:

- to introduce the basic concepts of statistics and probability,
- to develop an understanding of statistical thinking,
- to introduce statistical techniques to collect and analyze data correctly,
- to draw conclusions or make recommendations based on the statistical analysis.

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### Text Books.

William Navidi	Statistics for Engineers and Scientists	McGraw-Hill	2015	978-0073401331
Jay L. Devore	Probability and Statistics for Engineering and the Sciences	Duxbury Pr.	2008	978-0495382171

### Reference Book.

Montgomery, D. C., and Runger, G. C.	Applied Statistics and Probability for Engineers	Wiley	2014	9781118744123
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### Grading.

Assessment Tools	Quantity	Percentage (%)
Homework / Quiz	3	30
Midterm	1	30
Final	1	40

**Course Topics.** This is a tentative outline, and the instructor reserves the right to make changes as he sees necessary.

Week	Topic(s)
1	Introduction
2	Numerical and graphical descriptive techniques
3	Elements of probability
4	Discrete random variables and their distributions
5	Expectation of discrete random variables
6	Continuous random variables and their distributions
7	Expectation of continuous random variables
8	Random samples, statistics, and their distributions
9	Estimation: Point and interval estimators
10	Hypothesis testing
11	Inference about two populations
12	Analysis of variance; one way, two way
13	Analysis of variance; one way, two way
14	Introduction to regression analysis and some applications

**Policy on Homework and Exams:**

Cheating in homework/quiz and exams has serious consequences. Therefore, all work submitted should reflect your honest effort.

All the announcements, including the examination dates will be posted on [webonline.cankaya.edu.tr](http://webonline.cankaya.edu.tr)

Instructor has the right of updating the syllabus.