

Course number and name	END 311 / Statistics
Credits, contact hours, categorization of credits	3 credits / 42 hours / Math and Basic Sciences
Instructor or course coordinator	Cengiz KAHRAMAN, Seda YANIK
Text book and other supplemental materials	<ul style="list-style-type: none"> • Akdeniz, F., <i>Olasılık ve İstatistik</i>, Nobel Yayınevi, 2006. • Milton, J.S., Arnold, J.C., <i>Introduction to Probability and Statistics: Principles and Applications for Engineering and the Computing Sciences</i>, McGraw-Hill, 1995. • Douglas C. Montgomery, George C. Runger, Norma F. Hubele, <i>Engineering Statistics</i>, John Wiley & Sons, 2007. • Montgomery, D.C., Runger, G.C., <i>Applied Statistics and Probability for Engineers</i>, 4th Edition, 2007.

Course information	
Content	<ul style="list-style-type: none"> a. To support the other courses of the Bachelor of Science, b. To develop the ability of analytical thinking, c. To draw conclusions from data and to gain inferential abilities, d. To gain the ability of designing an experiment.
Prerequisites	END 252 Theory of Probability
Type	Required

Course learning outcomes
<p>Students who pass the course will:</p> <ul style="list-style-type: none"> I. Obtain statistical characteristic of process by using data, II. Interpret the process situation by using central tendency, and dispersion measures, III. Estimate process parameters, IV. Create the background of statistical decision making, V. Determine the correlation between process' parameters, VI. Estimate the future value of process' parameters, Use statistical software. VII. Use statistical software.

Student outcomes	Level of contribution
SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	Partial
SO2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	Little
SO3. An ability to communicate effectively with a range of audiences.	Not applicable
SO4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	Partial
SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	Little
SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	High
SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Partial

Week	Topics	Learning outcome(s)
1	Descriptive statistics	I
2	Descriptive statistics	I
3	Central tendency and dispersion measures	I, II, VII
4	Graphical illustrations and frequency distributions	I, II
5	Sampling and estimation	III
6	Point and interval estimations	III, VII
7	Point and interval estimations	IV, VII
8	Principles of statistical decision making and hypothesis tests	IV
9	Hypothesis tests for means, variances, and proportions	IV, V, VII
10	Hypothesis tests for means, variances, and proportions	IV, V, VII
11	Chi-square tests	IV
12	Nonparametric tests	IV
13	Variance analysis	IV
14	Regression and correlation	V, VI