TOROS ÜNİVERSİTESİ

Faculty Of Engıneerıng
Industrıal Engıneerıng (Englısh)

Course Information

ENGINEERING STATISTICS					
Code	**Semester**	**Theoretical**	**Practice**	**National Credit**	**ECTS Credit**
		Hour / Week			
MAT311	Fall	3	0	3	3

Prerequisites and co-requisites	NONE
Language of instruction	English
Type	Required
Level of Course	Bachelor's
Lecturer	Assit. Prof. Dr. Türker ERTEM
Mode of Delivery	Face to Face
Suggested Subject	NONE
Professional practise (internship)	None
Objectives of the Course	The goal is to familiarize students with powerful analytical and numerical tools in the areas of probability and statistics that can be used to solve real world engineering problems.
Contents of the Course	Descriptive statistics. Elementary probability. Propagation of error. Probability distributions: binomial, Poisson, normal, exponential. The central limit theorem. Point and interval estimation. Selected examples of engineering applications.

Learning Outcomes of Course

#	Learning Outcomes
1	To Choose appropriate descriptive statistics and graphical displays to summarize a data set.
2	To compute the numerical values of the sample statistics and interpret them
3	To distinguish between commonly used random variables and sampling distributions in order to identify the appropriate statistical tools based on the context of a given problem.
4	To identify, formulate, and evaluate appropriate tools for statistical inference based on the context of a given problem.
5	To understand and to be able to apply the central limit theorem.

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	I. Sampling and Descriptive Statistics 1.1 Sampling 1.2 Summary Statistics	lecturing, problem solving, discussing
2	1.3 Graphical Summaries II. Probability 2.1 Basic Ideas	lecturing, problem solving, discussing
3	2.2 Counting Methods 2.3 Conditional Probability and Independence	lecturing, problem solving, discussing
4	2.4 Random Variables 2.5 Linear Functions of Random Variables	lecturing, problem solving, discussing
5	III. Propagation of Error 3.1 Measurement Error 3.2 Linear Combinations of Measurements	lecturing, problem solving, discussing
6	3.3 Uncertainties for Functions of One Measurement 3.4 Uncertainties for Functions of Several	lecturing, problem solving,

	Measurements	discussing
7	IV. Commonly Used Distributions 4.1 The Bernoulli Distribution 4.2 The Binomial Distribution	lecturing, problem solving, discussing
8	Mid-Term Exam	
9	4.3 The Poisson Distribution 4.4 Some Other Discrete Distributions	lecturing, problem solving, discussing
10	4.5 The Normal Distribution 4.6 The Lognormal Distribution	lecturing, problem solving, discussing
11	4.9 Some Principles of Point Estimation 4.10 Probability Plots	lecturing, problem solving, discussing
12	4.11 The Central Limit Theorem V. Confidence Intervals 5.1 Large-Sample Confidence Intervals for a Population Mean	lecturing, problem solving, discussing
13	5.2 Confidence Intervals for Proportions 5.3 Small-Sample Confidence Intervals for a Population Mean	lecturing, problem solving, discussing
14	5.4 Confidence Intervals for the Difference Between Two Means 5.6 Small-Sample Confidence Intervals for the Difference Between Two Means	lecturing, problem solving, discussing
15	5.7 Confidence Intervals with Paired Data 5.8 Prediction Intervals and Tolerance Intervals	lecturing, problem solving, discussing
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	William Navidi, Statistics for Engineers and Scientists	McGraw-Hill	
2	George G. Roussas, A Course in Mathematical Statistics	Academic Press	
3	John A. Rice, Mathematical Statistics and Data Analysis	Thomson Brooks/Cole	

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	To Choose appropriate descriptive statistics and graphical displays to summarize a data set.	1,11	1,2
2	To compute the numerical values of the sample statistics and interpret them	1,11	1,2
3	To distinguish between commonly used random variables and sampling distributions in order to identify the appropriate statistical tools based on the context of a given problem.	1,11	1,2
4	To identify, formulate, and evaluate appropriate tools for statistical inference based on the context of a given problem.	1,11	1,2
5	To understand and to be able to apply the central limit theorem.	1,11	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	3	42
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	2	28

3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	1	6	6
8	Midterm Exam	1	2	2
9	Quiz	0	0	0
10	Homework	0	0	0
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	1	10	10
16	Final Exam	1	2	2
				90