

**DEPARTMENT of INDUSTRIAL ENGINEERING
COURSE CATALOGUE FORM**



Course Code: INDE2156				Course Title: Engineering Statistics			
Semester	L + R + L	Credits	AKTS	Language	Category	Instructional Methods	Prerequisites
4	3 + 0 + 0	3	6	English	Required	Lecture	MATH2201
Course Objectives			The aim of the course is to provide the students the fundamentals of engineering statistics such as random sampling, methods of inference and comparative study.				
Course Content			Data analysis. Sampling distributions. Inference. Confidence intervals. Hypothesis tests				
Course Learning Outcomes			Upon successful completion of the course, the student is able to 1. Analyze data in a sample using numerical summaries and visual data displays. [1] 2. Compute probabilities of certain statistics using sampling distributions. [1] 3. Make statistical inference in engineering problems using confidence intervals. [2] 4. Make statistical inference in engineering problems using hypothesis testing. [2] [Note: Numbers in brackets are indicating the related program outcomes]				
ISCED Category of the course			52 Engineering				
Textbook			Probability & Statistics for Engineers & Scientists, R. E. Walpole, R. H. Myers, S. L. Myers, K. Ye, Pearson.				
Supplementary Material			Statistics for Engineering and the Sciences, W. Mendenhall, T. Sincich, Pearson.				

COURSE PLAN

Week	Topics	Laboratory / Tutorial Work
1	Introduction, definitions (population, sampling, mean, standard deviation)	
2	Data analysis, visual data displays	Exercises
3	Reproduction property of normal distribution and central limit theorem	
4	Sampling distribution of sample mean (Z-distribution)	
5	Sampling distribution of sample mean (t-distribution)	
6	Sampling distribution of sample standard deviation (Chi-square and F distribution)	Exercises
7	Confidence intervals on population mean	
8	Confidence intervals on population mean	
9	Confidence intervals on population proportion	
10	Confidence intervals on population standard deviation	Exercises
11	Hypothesis testing and general concepts	
12	Hypothesis tests on population mean	
13	Hypothesis tests on population proportion	
14	Hypothesis tests on population standard deviation	Exercises

COURSE ASSESSMENT SYSTEM

	Activities	Contribution (%)
Semester Activities	Semester Written Exams	58
	Homework	-
	Reports	-
	Labs	-
	Seminars	-
	Presentations	-
	Term Project	-
	Other (attendance, field trip etc.)	7
FINAL EXAM		35
Total		100

CONTRIBUTION of the COURSE on INDUSTRIAL ENGINEERING PROGRAM OUTCOMES

	Program Outcomes	Low	High
1	Adequate knowledge in mathematics, science and subjects pertaining to Industrial Engineering; ability to use theoretical and applied knowledge in these areas in complex engineering problems.		X
2	Ability to identify, formulate, and solve complex Industrial Engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.		X
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.		
4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving problems encountered in engineering practice; ability to employ information technologies effectively.		
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.		
6	Ability to work efficiently individually and in intra-disciplinary / multi-disciplinary teams.		
7	Knowledge of Turkish and English languages; ability to communicate effectively orally, inscriptive and visually by using these languages (via business methods such as reports, presentations and instructions).		
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.		
9	Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.		
10	Knowledge about business life practices (management activities such as project, risk, change and quality etc.); awareness in entrepreneurship, innovation; knowledge about sustainable development.		
11	Knowledge about the global and social effects of engineering practices on health, environment, economics and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.		

ECTS - WORK LOAD TABLE

COURSE ACTIVITIES	Quantity	Time (hr)	Work Load (hr)
Lectures	14	3	42
Final Exam (Preparation included)	1	20	20
Semester Written Exams (Preparation included)	2	12	24
Out of class study time	14	3	42
Homework	3	4	12
Reports			
Labs			
Seminar			
Presentations			
Term Project			
Total Load (hr)			140
ECTS Credits of the course (Total Work Load / 25)			6

Revision / Date 5/02/2020	Coordinator / Prepared By Demet Özgür Ünlüakın	Approved By Çağlar Aksezer
------------------------------	---	-------------------------------