T.C. ESKİŞEHİR OSMANGAZİ UNIVERSITY
ENGINEERING AND ARCHITECTURE FACULTY
MECHANICAL ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

SEMESTER	Spring

COURSE CODE	151816364	**COURSE NAME**	Statistics

SEMESTER	WEEKLY COURSE PERIOD					COURSE OF	
	Theory	**Practice**	**Laboratory**	**Credit**	**ECTS**	**TYPE**	**LANGUAGE**
6	2	0	0	2	3	COMPULSORY (X) ELECTIVE ( )	English

COURSE CATAGORY			
Basic Science	**Basic Engineering**	**Engineering Subjects** [if it contains considerable design, mark with (√)]	**Social Science**
X			

ASSESSMENT CRITERIA			
MID-TERM	**Evaluation Type**	**Quantity**	**%**
	Mid-Term	1	40
	Quiz		
	Homework		
	Project		
	Report		
	Others (………)		
FINAL EXAM		1	60
PREREQUIEITE(S)			

COURSE DESCRIPTION	This course covers the fundamental concepts of statistics and probability models used in analysis of engineering problems. Topics include discrete random variables and probability distributions, continuous random variables and probability distributions, joint probability distributions, random sampling and data description, point estimation of parameters, statistical intervals for a single sample, and tests of hypotheses for a single sample.
COURSE OBJECTIVES	1. Use statistical methodology and tools in the engineering problem-solving process. 2. Compute and interpret descriptive statistics using numerical and graphical techniques. 3. Understand the basic concepts of probability, random variables, probability distribution, and joint probability distribution. 4. Compute point estimation of parameters, explain sampling distributions, and understand the central limit theorem. 5. Construct confidence intervals on parameters for a single sample.
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	In this course, the basic concepts and methods of statistics and probability are given to the engineering students
COURSE OUTCOMES	1. Students analyze and interpret the collected data and choose and use appropriate statistical methods in a decision-making process. 2. They can analyze discrete and continuous random variables. 3. They can find the expected value and standard deviations of commonly used distributions and solve related problems
TEXTBOOK	Montgomery and Runger, Applied Statistics and Probability for Engineers, John Wiley and Sons, Inc. 3rd. edition 2003.
OTHER REFERENCES	1) Walpole, Myers, Myers, Ye, Probability and Statistics for Engineers and Scientists, Pearson 9th edition, 2012. 2) Sheldon Ross, A First Course in Probability, Prentice Hall, 7th edition, 2006

TOOLS AND EQUIPMENTS REQUIRED	

COURSE SYLLABUS

WEEK	TOPICS
1	Basic statistical concepts and the role of statistics in the engineering problem solving process
2	Probability, sample space and events
3	Conditional probability, multiplication and total probability rules
4	Bayes' theorem and random variables
5	Discrete random variables and probability distributions
6	Discrete uniform distribution, Binomial distribution
7	Geometric and Negative Binomial distribution
8	Midterm
9	Hypergeometric distribution, Poisson distribution
10	Continuous random variables and probability distributions
11	Normal Distribution
12	Normal Approximation to the Binomial and Poisson Distribution
13	Exponential, Erlang and Gamma Distribution
14	Joint Probability Distribution
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems.	[X]	[ ]	[ ]
2	Ability to determine, define, formulate and solve complex engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	[ ]	[X]	[ ]
3	Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods.	[ ]	[X]	[ ]
4	Ability to develop, select and use modern methods and tools required for engineering applications; ability to effective use of information technologies.	[ ]	[X]	[ ]
5	In order to investigate engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	[X]	[ ]	[ ]
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	[ ]	[X]	[ ]
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	[ ]	[ ]	[X]
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	[X]	[ ]	[ ]
9	Understanding of professional and ethical issues and taking responsibility	[ ]	[X]	[ ]
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	[ ]	[X]	[ ]
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.	[ ]	[X]	[ ]

1:None. **2**:Partially contribution. **3**: Completely contribution.

Prepared by: Prof. Dr. Hasan Kıvanç Aksoy   **Date:** 15/11/2021

Signature(s):