



**HASAN KALYONCU UNIVERSITY**  
**Faculty of Engineering**  
**Course Description Form**

<b>COURSE:</b> Probability and Statistics				
<b>CODE:</b> MATH213		<b>SEMESTER:</b> FALL		
<b>LANGUAGE:</b> ENGLISH		<b>TYPE:</b> COMPULSORY		
<b>PRE-REQUISITES:-</b> <b>CO-REQUISITES:-</b>	<b>THEORY</b>	<b>PRACTICAL</b>	<b>CREDIT</b>	<b>ECTS</b>
<b>WEEKLY HOURS:3</b>	3	0	3	5

**CONTENT OF THE COURSE:**

Introduction to probability, permutation, combination, relative frequency concept, axioms of probability, set theory, conditional probability, Bayes theorem, independence, mutually exclusive events, discrete random variables, probability mass and distribution functions, expected value, variance, Bernoulli, Binomial, and Poisson random variables, continuous random variables, their probability density and distribution functions, expected value and variance of continuous random variables, uniform, Gauss (normal), and exponential random variables, density function of a function of a random variable, jointly distributed random variables, density function of functions of independent random variables, introduction to random processes.

**OBJECTIVE OF THE COURSE:**

Objective of this course is to cover basic principles of the theory of probability, and its applications. This course aims to give the basic principles and infrastructure of probability theory needed in applications such as signal analysis, analog and digital communications, speech processing and data modeling. A student is expected to solve basic probabilistic problems and systems analytically after taking the course.

**WEEKLY SCHEDULE**

<b>Week</b>	<b>Topics</b>
1	Introduction to Statistical and Descriptive Statistics
2	Axioms of probability, set theory
3	Conditional probability, Bayes theorem
4	Statistical independency, mutually exclusive events
5	Discrete random variables, their probability mass and distribution functions
6	Expected value of random variables
7	Variance and covariance of random variables
8	MIDTERM
9	Bernoulli, Binomial random variables and their applications
10	Negative binomial, Geometric and Poisson random variables and their applications
11	Introduction to continuous random variables
12	Uniform, exponential random variables, density function of a random variable
13	Gauss (normal) random variables
14	Applications and review

**TEXTBOOK:** Probability and Statistics for Engineers&Scientists, Walpole, Myers,Myers, Ye, 9th Edition, Pearson

**REFERENCE BOOKS:**Introduction to Probability and Statistics for Engineers and Scientists, 4th Edition, Sheldon M. Ross, Academic Press.

<b>INSTRUCTOR(S):</b>	Assoc. Prof. Dr. Ece Yetkin ÇELİKEL
<b>FORM PREPARATION DATE:</b>	02.03.2020

	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
<b>LO1</b>	3	1	0	0	0	0	0	0	0	0	0
<b>LO2</b>	3	2	0	0	0	0	0	0	0	0	0
<b>LO3</b>	3	2	0	0	0	0	0	0	0	0	0
<b>LO4</b>	3	1	0	0	0	0	0	0	0	0	0
<b>LO5</b>	3	1	0	0	0	0	0	0	0	0	0
	PO: Program Outcomes   LO: Learning Outcomes Values: 0: None   1: Low   2: Medium   3: High										

**LEARNING OUTCOMES OF THE COURSE:**

**LO1:**Students shall learn the basic techniques and principles of the probability theory  
**LO2:** be able to theoretically analyze and solve probability problems  
**LO3:** Students will understand and solve basic probabilistic problems, which are encountered in engineering applications  
**LO4:** Students will use probability models for some random experiments  
**LO5:** Students will understand the basic principles of probability calculus.

**CONTRIBUTION OF THE COURSE TO VOCATIONAL EDUCATION**

With the help of this course, students have knowledge of mathematics for solving problems that require probability and statistics in the field of engineering.