Course Description	
Course Code	YZ 202
Course Name	PROBABILTY THEORY AND STATISTICS
Prerequisite Courses	
Language of the Course	The English
Course Coordinator	
Instructor(s)	
Course Assistants	
The aim of the course	This course aims to provide basic and some further concepts of probability and statistics.
Course Content	Topics of this course include the basic topics of probability like axioms of probability, Bayes theorem, random variables and sums of random variables, confidence intervals, discrete and continuous-time random processes and basic concepts of statistics are given in this lecture:

Weekly Course Content	
Week 1	Basic terms of probability, set theory, Sample space, Permutation, and Combination.
Week 2	Introduction to Probability, Axioms of probability, Geometrical Probability, Conditional Probability and Bayes Theorem.
Week 3	Random Variables and Their Distributions: Discrete, Continuous, and two-dimensional Random variables.
Week 4	Expected Values, Standard Deviation and Variance.
Week 5	Moments, Chebyshev.
Week 6	Some discrete Distributions: Bernoulli, Binomial, Multivariate and Geometrical Distributions.
Week 7	Some discrete Distributions: Negative Binomial, Hypergeometrical and Poisson Distributions.
Week 8	Midterm exam.
Week 9	Some Continuous Distributions: Normal and Standard Normal Distributions, Some Continuous Distributions: Uniform, Exponential, Gamma, Beta Distributions.
Week 10	Introduction to Statistics: Sample Space, Organising and analyzing data, frequency distributions, central tendency measures, graphical presentations of data, variation factor.
Week 11	Sample space distributions and Estimation: Point Estimation, Interval estimation for the expected value of population with known variance.
Week12	Sample space size in interval estimation for the expected value of population with known variance. Sample space size in Chebyshev.
Week 13	Interval estimation for the expected value of population with unknown variance. Interval estimation for variance or standard deviation of the population.
Week 14	Interval estimation for (distinction of expected values) and (ratio of variances) of two normal distributed population
Week 15	Final exam.

Course Learning Outcomes	
1	Ability to learn basic terms of probability, set theory, Sample space, Permutation, and Combination.
2	Ability to learn introduction to Probability, Axioms of probability, Geometrical Probability, Conditional Probability and Bayes Theorem.
3	Ability to learn Random Variables and Their Distributions: Discrete, Continuous and two-dimensional Random variables.
4	Ability to learn Expected Values, Standard Deviation, Variance, Moments and Chebyshev.
5	Ability to learn Some discrete Distributions: Bernoulli, Binomial, Multivariate, Geometrical Negative Binomial, Hypergeometrical and Poisson Distributions.
6	Ability to learn Some Continuous Distributions: Normal and Standard Normal, Uniform, Exponential, Gamma and Beta Distributions.
7	Ability to learn Introduction to Statistics: Sample Space, Organising and analyzing data, frekans distributions, central tendency measures, graphical presentations of data, variation factor.
8	Ability to learn Sample space distributions and Estimation: Point Estimation, Interval estimation for the expected value of population with known variance, sample space size in interval estimation for the expected value of population with known variance. Sample space size in Chebyshev.
9	Ability to learn interval estimation for the expected value of population with unknown variance. Interval estimation for variance or standard deviation of the population.
10	Ability to learn Interval estimation for (distinction of expected values) and (ratio of variances) of two normal distributed population

Contribution of the Course to Program Qualifications		Contribution Level
01	The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues.	4
02	The student will have the ability to identify, define, formulate and solve a problem in software and computer systems.	2
03	The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process.	5
04	The student will have the ability to use the design capability, techniques and tools required for engineering applications.	5
05	The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results.	5
06	The student will have the ability to work between disciplines and teamwork.	5
07	The student will have the ability to work in international environments and adapt to different cultures.	2
08	The student will have verbal and written communication skills in Turkish and English.	3
09	The student will have the awareness of the necessity of lifelong learning and the ability to realize it.	5
10	The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility.	5
11	The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.).	3
12	The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way.	3
13	The student will have the ability to find unusual ways and produce projects.	5
14	The student will have professional self-confidence, being an entrepreneur and taking initiative.	4
15	It is sensitive about the problems of the age and looks after the national interests.	5

ECTS WORKLOAD	Number	Duration (hours)	Number*Duration
Face to face education	14	3	42
Out-of-class study time (pre-study, reinforcement)	14	2	28
Homeworks	3	3	9
Presentation / Seminar preparation	0	0	0
Quizzes	0	0	0
Preparation for midterm exams	1	15	15
midterm exams	1	2	2
Project (Semester assignment)	0	0	0
Lab	0	0	0
field work	0	0	0
Preparation for the final exam	1	20	20
Semester final exam	1	2	2
Research	14	2	28
TOTAL WORKLOAD			**146**
ECTS			**5**

Evaluation		
SEMESTER EVALUATION	**Number**	**Contribution Percentage**
Midterm	1	25

Quiz	0	0
Homework	3	15
SEMESTER TOTAL		**40**
Contribution rate of mid-term evaluations to success		40
Contribution rate of the final exam to success		60
GRAND TOTAL		**100**

RESOURCES	
Textbook	Olasılık ve İstatistik, Nobel Press, Prof. Dr. Fikri Akdeniz.
Helpful Resources	Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers, by Roy D. Yates and David J. Goodman, 2nd Ed., John Wiley & Sons, Inc. An Introduction to Probability Theory and Its Applications, Volume 1, 3rd Edition, William Feller (Princeton Univ., New Jersey), ISBN: 978-0-471-25708-0, 1968.