

SEMESTER 1

Department Department of Statistics				Date	
Course Unit Code İST1101	Course Unit Title Introduction To Probability And Statistics-I		Semester/Year Fall / 1	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	To enable students to learn the basic concepts, methods and applications of statistical science. This course aims to develop students' skills in collecting, organizing, analyzing and interpreting data. By learning descriptive and inferential statistical methods, students will learn to effectively use basic statistical tools that can be used in data analysis.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic Concepts
2	Arithmetic Mean
3	Weighted Mean
4	Geometric Mean
5	Squared Mean
6	Harmonic Mean
7	Non-sensitive averages: Mode, Median
8	Measures of Distribution, Range of Variation, Cartesians, Deciles, Santiles
9	Mean deviation, variance, standard deviation, coefficient of variation
10	Skewness

11	Moments, kurtosis
12	Correlation
13	Relationship Measures: Spearman Rho, Kendall Tau
14	Spread diagram, graphical representation of linear relationships, regression definition

Course Resources	Introduction to the Practice of Statistics - David S. Moore, George P. McCabe, Bruce A. Craig Statistics for Business and Economics - Paul Newbold, William L. Carlson, Betty Thorne
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			X
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
İST1111	Data Science	Fall / 1	3
Language of Instruction	Turkish		
Type of Course Unit	Compulsory		
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.		
Address of course	-		

Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	To develop students' ability to analyze, interpret and draw meaningful conclusions from large data sets. This course aims to enable students to manage data science projects from start to finish by providing knowledge in data collection, cleaning, visualization, modeling and reporting results. Students will gain practical experience using a variety of data science tools and techniques and develop their ability to solve real-world problems.
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Weekly Detailed Course Contents	
Week	Topic
1	Mass, sample, unit and variable concepts
2	Parameter, statistics concept
3	What is sampling? Explanation of sampling methods
4	Random numbers, simple random sampling
5	Random numbers, stratified sampling
6	Random numbers, probability sampling
7	Random numbers, non-probability sampling
8	Variables, measurement levels
9	Data collection tools
10	Data organization, processing, graphical representations
11	Numerical representation of data
12	Excel and SPSS application
13	Excel and SPSS application Excel and SPSS application
14	Excel and SPSS application

Course Resources	Data Science from Scratch - Joel Grus Introduction to Statistical Learning - Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-

	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.		X	
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.		X	
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			

12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code YMH1113	Course Unit Title Algorithm and Programming-I		Semester/Year Fall / 1	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	What are algorithms, how to set them up. What are the steps of systematic problem solving and how to do it? Introduction of flow diagram elements and development of algorithmic thinking structure with these elements. Sample problem solutions and the concept of looping in problem solving, the use of condition/condition statements. Introduction to Java programming language, variables, data types in Java, compiling the first program. Identifiers, operators, variable definition, constants in Java. Increment/decrement operators, comparison operators, decision structures (if, if-else, nested if-else, switch structure, conditional statement structure) in Java. Mathematical functions in Java, char data type, Unicode, ASCII, String type, print method. Loops in Java, while, do-while, for loops, break and continue concepts. Arrays in Java, single and multidimensional arrays, array operations, for each loop. Methods in Java, method definition, arguments.
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Weekly Detailed Course Contents	
Week	Topic
1	Understanding algorithms
2	What is an algorithm? Systematic problem solving
3	Flow diagrams
4	Problem solving, loop concept
5	Problem solving, condition/condition statements
6	Problem solving
7	Introduction to Java programming language
8	Variables in Java, data types, initial program compilation
9	Identifiers, operators, variable definition, constants in Java
10	Increment/decrement operators, comparison operators in Java, decision structures (if, if-else, nested if-else, switch
11	Mathematical functions in Java, char data type, Unicode, ASCII, String type, printf
12	Loops in Java, while, do-while, for loops, break and continue concepts
13	Arrays in Java, single and multi-dimensional arrays, array operations, foreach loop
14	Methods in Java, method definition, arguments

Course Resources	Y. Daniel Liang (2009), Introduction to JAVA Programming Comprehensive Version 10th Edition, Pearson
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Academic Year		Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
MAT1131	Linear Algebra-I		Fall / 1		6	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
4	4	0	-		-	-
Name of Lecturers	Prof. Dr. Muhittin Evren AYDIN					
Assistants	-					

Course content	Definition of a matrix, matrix addition and scalar multiplication operations, matrix multiplication operation, elementary operations. Definition and calculation of the determinant, methods of determinant calculation. Calculation of the inverse of a matrix with respect to multiplication. The rank of a matrix. Definition of a system of linear equations, existence, non-existence, and uniqueness of solutions. Cramer's rule, Gauss-Jordan methods. Homogeneous systems of equations. Definition of algebraic structures and binary operations. Group and subgroup definitions and some basic properties, examples of groups. Definition of a ring and some basic properties, examples of rings. Definition of a field and some basic properties, examples of fields. Definition of a vector space and some basic properties.
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Weekly Detailed Course Contents	
Week	Topic
1	Matrix definition, matrix addition and scalar multiplication operations. Examples related to these.
2	Matrix multiplication operation and related examples.
3	Types of matrices: square matrices, diagonal matrices, identity matrix. The transpose of a matrix. Examples related to these.
4	Elementary operations, definition and calculation of the determinant. Examples related to these.
5	Methods of determinant calculation and related examples.

6	Calculation of the inverse of a matrix with respect to multiplication and related examples.
7	Symmetric and antisymmetric matrices. Orthogonal matrices. Examples related to these.
8	The rank of a matrix, definition of a system of linear equations, existence, non-existence, and uniqueness of solutions. Examples related to these.
9	Applications.
10	Cramer's rule, Gauss-Jordan methods, homogeneous systems of equations. Examples related to these.
11	Group definitions and some basic properties, examples of groups.
12	Definition of a ring and some basic properties, examples of rings.
13	Definition of a field and some basic properties, examples of fields.
14	Applications.

Course Resources	1. Lineer Cebir, Arif SABUNCUOĞLU 2. Lineer Cebir, Hasan Hilmi HACISALİHOĞLU
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social sciences	0

Course Outcome	The goal is to provide students with fundamental knowledge on vectors, matrices, and determinants, and to support theoretical concepts with practical applications, enabling them to develop the ability to solve systems of linear equations.
Aims of the course	The aim is to provide students with the necessary foundational knowledge for the Linear Algebra course. The goal is to equip them with the technical expertise to generate the most suitable solutions for problems related to Linear Algebra that require resolution.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics		Academic Year	Date
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits

MAT1133	Mathematics I	Fall / 1	6		
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
5	4	2	-	-	-
Name of Lecturers	Professor Handan ÖZTEKİN				
Assistants	-				

Course content	Numbers, Sets, Absolute Value, Inequalities and Equations, Functions, Trigonometric Functions and Inverse of them, Exponential and Logarithmic Functions, Sequences and Their Limits, Series and Tests of Convergence, Power Series, Limits of Functions , Continuity of a Function, Differentiation and Differentiation Rules, Logarithms and Exponential Functions and Their Derivatives, Logarithmic Differentiation, Inverse Trigonometric Functions and Their Derivatives, Hyperbolic Functions and Their Derivatives, Inverse Hyperbolic Functions and Their Derivatives, Applications of Derivative, Indeterminate Limits and L'Hospital Rules, Taylor and Maclaurin Series.
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Weekly Detailed Course Contents	
Week	Topic
1	Numbers, Sets, Absolute Value, Inequalities and Equations
2	Functions and Types of Functions
3	Exponential and Logarithmic Functions
4	Trigonometric Functions
5	Sequences and Their Limits
6	Introduction to Series, Series of Partial Sums and Convergence
7	Positive Term Series and Tests of Convergence, Power Series
8	Limits of Functions and Rules of Limit, Continuity of a Function
9	Differentiation and Differentiation Rules
10	High Order Derivative and Chain Rule
11	Logarithmic Differentiation, Derivative of Inverse Function and Closed Function
12	Derivatives of Exponential, Logarithmic, Hyperbolic, Trigonometric Functions
13	Indeterminate Limits and L'Hospital Rules, Taylor and Maclaurin Series
14	General Practice Course

Course Resources	1. Mathematical Analysis I (Mustafa Balcı) 2. Calculus I (Ahmet Dernek) 3. Solving Mathematical Analysis I (Mustafa Balcı)
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social sciences	0

Course Outcome	Students have basic information about real number, sequence, function subjects and understand limit, continuity and derivative concepts theoretically.
Aims of the course	1. To create the necessary infrastructure of the students in regard to the Calculus lesson. 2. Acquiring the technical knowledge that will be able to produce the most suitable solution to the students in problems that are related to mathematics lesson and require solution.
The way of processing course	Face to face

Relation of the course with program outcomes					
Learning outcomes			1	2	3
1	Explains the concepts and principles of probability and statistics.				
2	Indicates the place and importance of statistics in professional life.				
3	Defines basic economic and legal concepts and principles.				

4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 2

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST1102	Introduction To Probability And Statistics-II		Fall / 1		3	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	To develop students' skills in collecting, analyzing, interpreting and presenting data. This course aims to strengthen students' ability to conduct research and make data-driven decisions by providing knowledge of basic statistical concepts, techniques and applications. Students will learn both descriptive and inferential statistical methods and will be able to apply these methods to various data sets.
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Weekly Detailed Course Contents	
Week	Topic
1	Universe and parameter concept
2	Sample and statistics concept
3	Selection of different samples representing the universe and calculation of sample statistics
4	Sampling distribution
5	Central limit theorem, distribution of sample mean
6	Point estimate, interval estimate, confidence interval for the mean
7	Confidence interval for the mean
8	Confidence interval for the ratio
9	Confidence interval for the variance
10	Confidence interval for the difference of two means
11	Confidence interval for the difference of two ratios
12	Confidence interval for the difference of two variances
13	Tests of goodness of fit
14	Homogeneity of variances

Course Resources	Ünver, Ö., Gamgam, H., Altunkaynak, B. (2016) SPSS Uygulamalı Temel İstatistik Yöntemler, Seçkin Yayınları Spiegel, M. (2000), Schaum's Outlines: İstatistik, Nobel Kitabevi. Moore, D.S., McCabe, G.P., Craig, B.A., Introduction to Practice of Statistics, 2009, W. H. Freeman and Company, 9781429216227
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-

	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			X
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			

16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code İST1112	Course Unit Title Critical And Analytical Thinking		Semester/Year Fall / 1	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	The general aim of this course is to understand the importance of thinking and thinking skills, basic thinking skills, and to apply critical and analytical thinking skills in daily and professional life.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic concepts and definitions
2	Brain as a thinking organ

3	Ways of thinking and grouping of thinking
4	Involuntary thinking and its characteristics
5	Voluntary thinking and its characteristics
6	Methods of voluntary thinking
7	Critical and analytical thinking
8	Stages of critical and analytical thinking
9	Factors affecting critical and analytical thinking
10	Scope of critical and analytical thinking
11	Critical and analytical reading
12	Critical and analytical listening
13	Critical and analytical writing
14	Self-assessment of critical and analytical thinking process

Course Resources	İpşiroğlu, Z. (2002). Düşünmeyi Öğrenme ve Öğretme, İstanbul: Alfa Yayınları. Nosich, M. G. (2015). Eleştirel düşünme ve disiplinler arası eleştirel düşünme rehberi (çev. B. Aybek). Ankara: Anı Yayıncılık.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			X
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
YMH1114	Algorithm and Programming-II		Fall / 1		3	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Introduction to object oriented programming in Java, using methods. Objects and classes, data space encapsulation, object arrays, immutable object and class concepts and definition. Object oriented thinking, class abstraction and encapsulation concepts, package, public, default, private concepts. Inheritance, superclasses and subclasses. Polymorphism, method overriding and overloading. Exception handling. File class and file input/output operations (File class, PrintWriter and Scanner). Abstract classes. Interfaces (interfaces). Class design guidelines. Graphical user interface (GUI)
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to object oriented programming with Java
2	Using methods in Java
3	Objects and classes
4	Objects and classes, data field encapsulation, object arrays, immutable objects and classes
5	Object oriented thinking, class abstraction and encapsulation concepts
6	Object oriented thinking, package, public, default, private concepts
7	Inheritance, superclasses and subclasses
8	Polymorphism, method overriding and overloading
9	Exception handling
10	File class and file input/output operations File class, PrintWriter and Scanner

11	Abstract classes
12	Interfaces
13	Class design guidelines
14	Graphical user interface (GUI)

Course Resources	Y. Daniel Liang (2009), Introduction to JAVA Programming Comprehensive Version 10th Edition, Pearson
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	

The way of processing course	Face to face
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Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics		Academic Year	Date
Course Unit Code MAT1132	Course Unit Title Linear Algebra-II	Semester/Year Spring / 1	Number of ECTS Credits 6
Language of Instruction	Turkish		
Type of Course Unit	Compulsory		

Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
4	4	0	-	-	-
Name of Lecturers	Prof. Dr. Muhittin Evren AYDIN				
Assistants	-				

Course content	Definition of vector space and some basic properties, subspaces, linear combination and the concept of being spanned by vectors, linearly dependent and independent vectors, the concept of a basis, operations between vectors and their applications, scalar product and cross product, the concept of Gram-Schmidt orthonormalization, linear transformations between vector spaces, matrices corresponding to linear transformations, rank and kernel space of a transformation, eigenvalue and eigenvector concepts, the Cayley-Hamilton Theorem and applications, factorization of matrices.
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Weekly Detailed Course Contents	
Week	Topic
1	Definition of a vector space and some basic properties, examples of vector spaces.
2	Subspaces, linear combination, and the concept of being spanned by vectors. Examples related to these.
3	Linearly dependent and independent vectors. Examples related to these.
4	The concept of a basis, operations between vectors and their applications. Examples related to these.
5	Scalar product and cross product. Examples related to these.
6	Concept of Gram-Schmidt orthonormalization. Examples related to these.
7	Linear transformations between vector spaces. Examples related to these.
8	Applications.
9	Matrices corresponding to linear transformations. Examples related to these.
10	The rank of a transformation, the kernel space. Examples related to these.
11	Eigenvalue and eigenvector concepts. Examples related to these.
12	Cayley-Hamilton Theorem and its applications. Examples related to these.
13	Factorization of matrices. Examples related to these.
14	Applications.

Course Resources	3. Lineer Cebir, Arif SABUNCUOĞLU 4. Lineer Cebir, Hasan Hilmi HACISALİHOĞLU
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-

	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social sciences	0

Course Outcome	To provide students with fundamental knowledge on vectors, vector spaces, and linear transformations, and to support theoretical concepts with practical applications, enabling them to develop the ability to calculate eigenvalues and eigenvectors.
Aims of the course	The aim is to provide students with the necessary foundational knowledge for the Linear Algebra course. The goal is to equip them with the technical expertise to generate the most suitable solutions for problems related to Linear Algebra that require resolution.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			

11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Academic Year		Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
MATH1134	Mathematics II		Spring / 1		6	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
5	4	2	-		-	-
Name of Lecturers	Professor Handan ÖZTEKİN					
Assistants	-					

Course content	Derivative and its Applications, Indefinite Integrals, Methods of Integration, Definite (Riemann) Integral, Applications of Definite Integral (limits, area, volumes, the area of a Surface of Revolution, account of length of a curve), Improper Integrals (First, Second and Third Type), Definition and Image set of Multi-Variable Functions, Partial Derivations, Chain Rule, Total Differential, Derivation of Implicit Functions and Related Problems, Differentiation under Integral Sign (Leibtniz), Double Integrals, Regional Transformations and Related Problems.
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Weekly Detailed Course Contents

Week	Topic
1	Derivative and its geometric meaning
2	Local Extremum Points
3	Maximum and Minimum Points
4	Indefinite Integrals
5	Methods of Integration
6	Definite (Riemann) Integral
7	Applications of Definite Integral
8	Improper Integrals (First, Second and Third Type)
9	Definition and Image set of Multi-Variable Functions
10	Partial Derivations, Chain Rule
11	Differentiation under Integral Sign
12	Double Integrals
13	Regional Transformations for Double Integrals and Related Problems.
14	General Practice Course

Course Resources	1. Mathematical Analysis I (Mustafa Balcı) 2. Calculus I (Ahmet Dernek) 3. Solving Mathematical Analysis I (Mustafa Balcı)
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social sciences	0

Course Outcome	Students have basic information about indefinite and definite integral, series and support these concepts with applications. Students have basic information about partial derivation, chain rule, maximum and minimum problems, of two-variable functions, double integrals and applications.
Aims of the course	1. To create the necessary infrastructure of the students in regard to the mathematics lesson. 2. Acquiring the technical knowledge that will be able to produce the most suitable solution to the students in problems that are related to mathematics lesson and require solution.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 3

Department Department of Statistics				Date	
Course Unit Code İST 2101	Course Unit Title Sampling		Semester/Year Fall / 1	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	The course will be held 3 hours a week with face-to-face methods.				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Students will be able to conduct field studies, create a sampling plan, select and analyze the sample with the appropriate sampling technique, test the research hypothesis by establishing appropriate hypotheses.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic concepts, sampling techniques.
2	Sampling method appropriate to the mass structure, determining sample size and sampling units
3	Data types, data sources, data collection techniques.
4	Frequency distributions Measures
5	of central tendency Measures of
6	dispersion, skewness, kurtosis
7	Probability and Special Probability Distributions, Sampling Distributions
8	Sampling Distributions
9	Estimation of Parameters
10	Interval Estimation, Bootstrap Confidence Intervals
11	Hypothesis Testing

12	Logic of Sample Selection
13	Inferential Statistics: Parametric Tests I-II and Nonparametric Tests
14	Research Design and Statistical Test Selection

Course Resources	Örnekleme Yöntemleri ve Hipotez Testleri" Özer Serper, Mustafa AYTAÇ, Nuran BAYRAM.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code: IST2103	Course Unit Title Hypothesis Testing		Semester/Year Fall / 2	Number of ECTS Credits 6	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course aims to teach students the fundamental principles and applications of hypothesis testing, enhancing their ability to make statistical inferences. Students will gain proficiency in correctly formulating hypotheses, selecting appropriate statistical tests, and accurately interpreting the results.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Hypothesis Testing
2	One-Sample T-Test
3	Independent Two-Sample T-Test
4	Paired Two-Sample T-Test
5	One-Tailed and Two-Tailed Tests
6	ANOVA Analysis - I
7	ANOVA Analysis - II
8	Chi-Square Test
9	Correlation and Regression Analysis - I
10	Correlation and Regression Analysis - II
11	Nonparametric Hypothesis Tests - I
12	Nonparametric Hypothesis Tests - II
13	Applications and Project
14	Applications and Project

Course Resources	"Introductory Statistics" by Neil A. Weiss "Introduction to the Practice of Statistics" by David S. Moore, George P. McCabe, and Bruce A. Craig
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-

	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	1. Understanding the definition and significance of hypothesis testing. 2. Selecting and applying appropriate hypothesis tests for different data structures. 3. Interpreting hypothesis test results correctly and drawing meaningful conclusions. 4. Gaining practical experience in applying hypothesis tests to real-world datasets.
Aims of the course	The aim of this course is to teach students the fundamental principles and applications of hypothesis testing, enhancing their ability to make statistical inferences. Students will gain proficiency in correctly formulating hypotheses, selecting appropriate statistical tests, and accurately interpreting the results.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			

7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IST2105	Mathematical Statistics I		Fall / 2		6	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	This course provides a mathematical foundation for statistical analysis, focusing on probability theory, random variables, probability distributions, and statistical estimation. Students will learn to model and analyze statistical problems using mathematical tools, gaining essential skills for advanced statistical applications.
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Weekly Detailed Course Contents	
Week	Topic
1	Sigma Algebra, Borel Algebra, Probability Spaces
2	Conditional Probability in Distribution Functions, Bayes' Theorem
3	Random Variables, Distribution Functions and Their Properties
4	Multivariate Distributions and Their Properties
5	Multivariate Distributions and Their Properties (continued)
6	Expected Value and Variance in Distribution Functions
7	Generating Functions: Moment-Generating Function
8	Generating Functions: Characteristic Function, Probability Generating Function
9	Transformation Techniques
10	Transformation Techniques (continued)
11	Binomial, Geometric, and Negative Binomial Distributions
12	Poisson and Hypergeometric Distributions
13	Uniform, Exponential, and Normal Distributions
14	Bivariate Normal Distribution, Quadratic Forms

Course Resources	Mathematical Statistics with Applications – Dennis Wackerly, William Mendenhall, Richard L. Scheaffer Probability and Statistics for Engineering and the Sciences – Jay L. Devore
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Understand fundamental concepts of probability theory and their mathematical foundations. 2-Identify and analyze different types of random variables and their probability distributions. 3-Apply probability rules and theorems, including Bayes' Theorem, in statistical inference. 4-Utilize mathematical tools to derive expectations, variances, and moment-generating functions. 5-Develop a strong foundation for advanced statistical methods and real-world applications.
Aims of the course	This course aims to teach students the fundamental mathematical principles and methods of statistics. The topics covered include probability theory, random variables, probability distributions, and statistical estimation. By completing this course, students will be able to model and solve statistical problems within a mathematical framework.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			

Contribution of the course: 1:No 2:Partially 3:Completely

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
IST2107	Categorical Data Analysis with MAXQDA		Fall / 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Elective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course focuses on categorical data analysis using the MAXQDA software. Students will learn how to import, organize, code, and analyze qualitative data systematically. The course covers essential topics such as thematic and content analysis, coding techniques, category relationships, and data visualization. Additionally, students will explore advanced features of MAXQDA, including text analysis tools and reporting methods. By the end of the course, students will be able to conduct structured qualitative research and present their findings effectively.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to MAXQDA and its interface
2	Importing and managing data, overview of basic data analysis tools
3	Creating categories and coding
4	Coding principles and management
5	Establishing relationships between categories and creating tree structures
6	Analyzing relationships between coded data, working with coding trees
7	Thematic analysis and comparisons between categories
8	Data segmentation and grouping, interpretation, and extracting results
9	Advanced categorical analysis techniques (coding trees, morphological analysis, etc.)
10	Reporting and presenting categorical analysis results

11	Analyzing textual data and coding text
12	Using MAXQDA's text analysis tools, interpreting and reporting text analysis results
13	Data exchange and collaboration between projects, overview of other MAXQDA tools
14	Course evaluation and recommendations for future studies

Course Resources	Qualitative Data Analysis with MAXQDA – Udo Kuckartz, Stefan Rädiker The Coding Manual for Qualitative Researchers – Johnny Saldana
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	25
	Computer Sciences	25
	Programming Design	25
	Social Sciences	25

Course Outcome	1-Understand the installation process and basic interface usage of MAXQDA. 2-Import and organize various data types (text, audio, video, images) within MAXQDA. 3-Apply coding techniques to categorize and analyze qualitative data. 4-Conduct thematic analysis, content analysis, and other qualitative research methods. 5-Generate reports and effectively present qualitative analysis results.
Aims of the course	The aim of this course is to equip students with the necessary skills to effectively analyze categorical and qualitative data using MAXQDA software. Students will learn how to import, code, categorize, and interpret data systematically. Additionally, the course will

	focus on applying thematic and content analysis techniques, enabling students to generate meaningful insights and present their findings in a structured manner.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics			Date
Course Unit Code IST2109	Course Unit Title Demography	Semester/Year Fall / 2	Number of ECTS Credits 3
Language of Instruction	Turkish		
Type of Course Unit	Elective		

Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course explores the fundamental concepts and methods of demography, focusing on population dynamics, structure, and distribution. Topics include fertility, mortality, migration, population projections, and demographic transition models. Students will learn to collect, analyze, and interpret demographic data using statistical techniques. Additionally, the course examines the social, economic, and policy implications of demographic changes, providing insights into population trends and sustainable development strategies.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Demography and Basic Concepts
2	Population Growth and Decline, Population Pyramids, and Demographic Transition Model
3	Migration and Population Mobility
4	Types and Effects of Migration, Migration Policies and Immigrant Rights
5	Life Expectancy and Health Indicators
6	Access to Healthcare and Health Policies, Socioeconomic Impact of Aging Populations
7	Relationship Between Education and Demography, Education Policies, and Population Dynamics
8	Population Projections and Scenario Analysis
9	Predicting Future Demographic Trends
10	Population Policies and Sustainable Development Goals
11	Mid-term Project
12	Mid-term Project
13	Mid-term Project
14	Mid-term Project

Course Resources	Demography: The Study of Human Population – David Yaukey, Douglas L. Anderton Population and Society: An Introduction to Demography – Dudley L. Poston, Jr., Leon F. Bouvier
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-

	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	0
	Programming Design	0
	Social Sciences	50

Course Outcome	1-Define fundamental demographic concepts such as population size, fertility, mortality, and migration. 2-Collect and analyze real-world demographic data using appropriate statistical methods. 3-Apply demographic models (e.g., population projections) to predict future population trends. 4-Utilize demographic knowledge in policy-making and planning. 5-Critically assess demographic challenges and propose solutions.
Aims of the course	The aim of this course is to provide students with a comprehensive understanding of demographic concepts, population dynamics, and their social, economic, and environmental impacts. Students will learn to collect, analyze, and interpret demographic data, gaining essential skills for population studies, policy-making, and future demographic projections.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			

7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			X
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IST2111	Time Series Analysis		Fall / 2		3	
Language of Instruction	Turkish					
Type of Course Unit	Elective					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	This course covers the fundamental concepts and techniques of time series analysis, focusing on modeling and forecasting time-dependent data. Topics include time series components, exploratory data analysis, smoothing techniques, ARIMA and SARIMA models, autocorrelation analysis, and machine learning approaches. Students will apply these methods
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	using statistical software to analyze real-world time series data and evaluate model performance
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Components of Time Series
3	Moving Average and Exponential Smoothing
4	Autocorrelation and Partial Autocorrelation
5	ARIMA Models - I
6	ARIMA Models - II
7	Seasonal ARIMA (SARIMA) Models
8	GARCH Models
9	State-Space Models and Kalman Filter
10	Multivariate Time Series and VAR Models
11	Machine Learning Methods in Time Series Analysis
12	Case Studies - I
13	Case Studies - II
14	Student Project Presentations

Course Resources	Time Series Analysis and Its Applications – Robert H. Shumway, David S. Stoffer Forecasting: Principles and Practice – Rob J. Hyndman, George Athanasopoulos
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	75
	Computer Sciences	25
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Identify and differentiate the basic components of time series data (trend, seasonality, cyclic, and random components). 2-Understand the principles of moving average, exponential smoothing, ARIMA, and SARIMA models. 3-Evaluate the performance of ARIMA and SARIMA models using criteria such as AIC and BIC. 4-Apply time series analysis using statistical software tools. 5-Make forecasts using time series models and assess their accuracy.
Aims of the course	The aim of this course is to provide students with a comprehensive understanding of time series analysis, including its fundamental concepts, modeling techniques, and forecasting methods. Students will learn to analyze time-dependent data, apply various statistical models such as ARIMA and SARIMA, and use software tools to implement and evaluate time series models for practical applications.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IST2113	System Reliability-I		Fall / 2		3	
Language of Instruction	Turkish					
Type of Course Unit	Elective					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	This course covers the fundamental principles and mathematical foundations of system reliability analysis. Topics include reliability concepts, common life distributions, system reliability models (series and parallel systems), and methods for evaluating and improving system performance. Students will learn about advanced techniques such as minimal path and minimal cut analysis, Markov chains, redundancy optimization, and reliability bounds. Practical applications will be emphasized through case studies and project-based learning, enabling students to analyze, model, and optimize real-world system reliability problems.
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Weekly Detailed Course Contents	
Week	Topic
1	Mathematics of Reliability
2	Reliability Concepts, Common Life Distributions
3	Complex Analysis
4	Basic System Reliability Models
5	Series System Model, Parallel System Model
6	General Methods for System Reliability Evaluation, Parallel and Series Reductions, Pivotal Decomposition

7	Generating Minimal Paths and Minimal Cuts, Inclusion-Exclusion Method
8	Sum of Disjoint Product Method, Markov Chain Imbeddable Structures
9	Delta-Star and Star-Delta Transformations, System Reliability Bounds
10	General Methodology for System Design, Redundancy in System Design, Component Importance Measures
11	Majorization and Its Application in Reliability, Importance of Reliability in Optimal Design
12	Binary Rearrangement in Optimal Design, Optimal Arrangements for Series and Parallel Systems
13	Project Studies
14	Student Project Presentations

Course Resources	Mathematical Models for Systems Reliability – Benjamin Epstein, Ishay Weissman System Reliability Theory – Marvin Rausand Optimal Reliability Modeling – Way Kuo, Ming J. Zuo
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Understand and explain fundamental reliability concepts and commonly used life distributions.
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	2-Analyze and model the reliability of series, parallel, and complex systems. 3-Apply mathematical and statistical methods to evaluate and improve system reliability. 4-Utilize advanced techniques such as minimal path and minimal cut analysis, Markov chains, and redundancy optimization. 5-Develop and present reliability analysis projects based on real-world applications.
Aims of the course	The aim of this course is to provide students with a strong foundation in system reliability analysis by introducing key concepts, mathematical models, and evaluation methods. Students will learn to analyze, model, and optimize the reliability of various systems, applying theoretical knowledge to real-world problems through case studies and project-based learning.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department		Date	
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits

IST2115	Combinatorial Probability		Fall / 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Elective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course introduces fundamental combinatorial probability concepts, including set operations, counting rules, permutations, and combinations. Topics covered include binomial and multinomial theorems, Stirling numbers, Euler's function, probability spaces, classical probability, and geometric probability. Students will learn to apply combinatorial techniques to real-world probability problems and understand their theoretical foundations.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic Concepts: Finite Sets, Countable Sets, Set Operations, Counting Rule
2	Number of Elements in a Set, Equivalent Sets, Closed and Open Intervals, Interval Transformations
3	Permutations and Combinations
4	Concept and Properties of Characteristic Functions
5	Binomial Theorem
6	Geometric Interpretation of Combinations and Orbit Method
7	Multinomial Theorem
8	Drawing and Distribution Models
9	Addition and Subtraction Formulas, Second-order Stirling Numbers
10	Euler's Function
11	Probability in Finite and Countable Spaces
12	Simple Event, Sample Space, and Sigma Algebra
13	Classical Probability and Examples
14	Buffon's Needle Problem and Geometric Probability

Course Resources	Introduction to Probability– Alifettah Shahbazov, Birsen Yayinevi
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40

	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Understand and differentiate between simple and compound events. 2-Apply sigma algebra in probability theory. 3-Comprehend the concept of measure in finite sets. 4-Extend the measure concept from finite sets to more general spaces. 5-Utilize geometric probability by mapping certain probability problems onto geometric frameworks.
Aims of the course	The aim of this course is to develop students' ability to define all possible outcomes of an experiment and perform classical probability calculations. The course provides a strong foundation in combinatorial methods, enabling students to analyze probability problems through counting principles and combinatorial techniques.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			

6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IST2117	Analysis of Variance		Fall / 2		3	
Language of Instruction	Turkish					
Type of Course Unit	Elective					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	This course introduces students to the theoretical foundations and practical applications of ANOVA, covering one-way, two-way, and repeated measures ANOVA. Topics include assumptions of ANOVA, hypothesis testing, significance tests, interaction effects, and post-hoc comparisons. Students will gain hands-on experience in data analysis and result interpretation using statistical software.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to ANOVA: Basic Concepts and History
2	Types of ANOVA: One-Way ANOVA, Two-Way ANOVA, Repeated Measures ANOVA
3	Assumptions of ANOVA: Normality, Homogeneity, and Independence
4	ANOVA Hypotheses, Parameters, and Calculation Methods
5	One-Way ANOVA Analysis
6	Interpretation of ANOVA Results and Significance Tests
7	Two-Way ANOVA Analysis
8	Main Effects and Interaction Effects in Two-Way ANOVA
9	Repeated Measures ANOVA Analysis
10	Applications and Interpretation of Repeated Measures ANOVA
11	Midterm Project
12	Midterm Project
13	Midterm Project
14	Midterm Project

Course Resources	Design and Analysis: A Researcher's Handbook – Geoffrey Keppel, William H. Saufley Jr., Howard Tokunaga Introduction to the Practice of Statistics – David S. Moore, George P. McCabe, Bruce A. Craig
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least		

	YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Understand the fundamental concepts and theoretical foundations of ANOVA. 2-Apply one-way, two-way, and repeated measures ANOVA and interpret the results. 3-Use ANCOVA to control for independent variable effects. 4-Analyze and interpret interaction effects between factors. 5-Apply post-hoc tests (Tukey, Bonferroni, etc.) to determine differences between groups.
Aims of the course	The aim of this course is to teach students the fundamental principles, types, and applications of analysis of variance (ANOVA) techniques, which are used to compare means across multiple groups and examine the effects of variables. By the end of the course, students will be able to apply ANOVA methods in data analysis, interpret results, and effectively report their findings.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			

17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
YMH2119	Data Structures		Fall / 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Elective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course provides an in-depth understanding of data structures and algorithms. It covers basic data structures such as arrays, linked lists, stacks, queues, heaps, and hash tables, along with searching and sorting techniques. Students will also explore tree structures, binary search trees, balanced trees, and graph algorithms like BFS and DFS. By the end of the course, students will be able to apply data structures effectively to solve computational problems.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Data Structures, Basic Data Types, and Concepts
2	Time and Space Complexities (Asymptotic Notations)
3	Arrays and Lists, Linked Lists (Single & Doubly Linked Lists)
4	Stack Data Structure and Applications
5	Queue Data Structure and Applications
6	Recursion Concept and Its Applications
7	Hashing, Hash Functions, and Applications
8	Priority Queues and Heap Trees
9	Tree Data Structures and Applications

10	Binary Search Trees and Balanced Trees
11	Sorting Algorithms (Insertion, Selection, Bubble Sort)
12	Sorting Algorithms (Merge Sort, Quick Sort, Heap Sort, Radix Sort)
13	Greedy Algorithms and Graph Algorithms (BFS, DFS)
14	Shortest Path Algorithms (Dijkstra's Algorithm)

Course Resources	Introduction to Algorithms – Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein (3rd Edition, MIT Press)
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	25
	Computer Sciences	50
	Programming Design	25
	Social Sciences	0

Course Outcome	1-Understand the fundamental concepts and importance of data structures. 2-Comprehend abstract data types and their role in programming. 3-Implement and utilize fundamental data structures such as arrays, linked lists, stacks, and queues. 4-Apply data structures to solve real-world computational problems. 5-Analyze and compare different sorting and searching algorithms based on efficiency.
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Aims of the course	The aim of this course is to introduce fundamental data structures used for storing and accessing data efficiently in computer memory. Students will learn about various data structures, their time and space complexities, and their applications in problem-solving. Topics covered include lists, linked lists, stacks, queues, recursion, sorting and searching algorithms, hash tables, binary trees, balanced trees, and graph algorithms.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics			Date
Course Unit Code IKT2123	Course Unit Title	Semester/Year Fall / 2	Number of ECTS Credits 3

	Fundamental Macroeconomic Indicators				
Language of Instruction	Turkish				
Type of Course Unit	Elective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course covers the fundamental concepts and indicators of macroeconomics, including GDP, inflation, employment, fiscal and monetary policies, and international trade. It explores classical and Keynesian economic models, IS-LM and AD-AS frameworks, business cycles, and macroeconomic equilibrium. Students will learn to measure economic activities, interpret macroeconomic data, and assess the implications of different economic policies.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction
2	History of Macroeconomics, Research Areas, and Key Assumptions
3	Measurement of Economic Activity, GDP, and Related Concepts
4	Measurement of Economic Relations with Other Countries: Balance of Payments and Exchange Rate
5	Classical Economic Assumptions: Labor Market, Goods Market, and Money Market
6	Keynesian Model: Aggregate Expenditures and Equilibrium Income Level
7	Formation of IS-LM Model, General Equilibrium, and Imbalances
8	Midterm Exam
9	IS-LM-BP Model, Trade of Goods, and Capital Movements
10	AD-AS Model Analysis and Multiplier Mechanism
11	Business Cycle Theories: Unemployment, Inflation, and Indexation Processes
12	Aggregate Demand, Pigou Effect, and Short-Term Supply Models
13	Money, Inflation, and Interest Rates: Strategies for Reducing Inflation and Policy Implications
14	Budget Deficits, External Deficits, and Flow-Stock Equilibrium

15	Economic Growth and Neoclassical Growth Model
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Course Resources	Macro Economy – Yıldırım, K., Karaman, D., Taşdemir, M. (2013)
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	70
	Computer Sciences	30
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Understand the history, assumptions, and research areas of macroeconomics and their relationship with economic variables. 2-Measure economic activity and interpret macroeconomic indicators. 3-Analyze international economic relations and assess their impact on economic decision-making. 4-Evaluate markets within the framework of classical economic theory and discuss their short- and long-term effects. 5-Assess markets through Keynesian economic theory and analyze the impact of macroeconomic equilibrium.
Aims of the course	The aim of this course is to analyze macroeconomic events and phenomena by incorporating current economic issues. The course will provide students with an

	understanding of key macroeconomic indicators and their impact on economic policies and decision-making.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			X
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department		Date	
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
MAT2135	Real Analysis	Fall / 2	3
Language of Instruction	Turkish		
Type of Course Unit	Elective		

Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	This course introduces key concepts of real analysis, focusing on measure theory, integration, and their applications. Topics include measure and sigma-algebras, Lebesgue measure, measurable functions, Riemann and Riemann-Stieltjes integrals, stochastic integration, and Itô calculus. Students will apply these concepts to solve complex mathematical problems and develop models in dynamic systems.
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Weekly Detailed Course Contents	
Week	Topic
1	Concept of Measure and Its Properties
2	Measure in the Plane, Algebraic Structure
3	Necessity of Sigma-Algebras, Inner and Outer Measure
4	Open and Closed Sets, $\liminf$ and $\limsup$ Concepts
5	Measurable Sets
6	Lebesgue Measure and Lebesgue Measurable Sets
7	Measurable Functions and Random Variables
8	Riemann Integrable Functions
9	Riemann-Stieltjes Integral and Expectation of a Random Variable
10	Quadratic Mean Convergence
11	Examples Using Quadratic Mean Convergence
12	Concept of Stochastic Integration
13	Itô Integral
14	Problems Solvable with Itô Integral

Course Resources	Introduction to Probability, Alifettah Shahbazov, Birsen Yayinevi
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	In-Term studies	Quantity	Percentage (%)
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Assessment Methods and Criteria	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	1-Gain a comprehensive understanding of the integral concept and its applications. 2-Determine the appropriate mathematical structure needed for solving various problems. 3-Develop models for dynamic systems, including applications in finance. 4-Understand the concept of stochastic integration. 5-Analyze and apply the concept of quadratic mean convergence.
Aims of the course	The aim of this course is to build the necessary mathematical foundation for understanding instantaneous changes in functions and structures. Students will develop a deep understanding of measure theory, integration, and stochastic processes, which are essential for advanced mathematical analysis and applications in fields like finance and probability theory.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			

4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 4

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits		
İST 2102	SURVEY DESIGN		Spring/ 2	3		
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers	Associate Professor Ayşe BUGATEKIN					

Assistants	-
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Course content	An introduction to sampling theory will be provided, and how different sampling techniques are used in statistical analysis will be examined. Practical topics such as survey design, data collection processes, and computer coding of survey results will be covered. Case studies and presentations will be used to demonstrate how theoretical knowledge is applied in practice within the scope of student projects.
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Weekly Detailed Course Contents	
Week	Topic
1	General definitions and concepts
2	Introduction to simple random sampling
3	Population calculation in simple random sampling
4	Application of simple random sampling to population proportion
5	Introduction to stratified sampling
6	Application of stratified sampling to population mean
7	Application of stratified sampling for population proportion
8	Introduction to stratified sampling
9	Single-stage sampling methods
10	Single stage sampling methods Application for population mean and proportion
11	Survey methods, advantages and disadvantages
12	Areas of use of surveys and presentations of student projects
13	Main steps of the survey and presentations of student projects
14	Computer coding of survey results and presentations of student projects

Course Resources	Özer Serper ve ark., 2013, Örnekleme, Ezgi Kitabevi Yayınları
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be		

	evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Statistics and Basic Sciences	70
	Computer Sciences	30
	Programming Design	0
	Social Sciences	0

Course Outcome	Survey design program output enables the creation of structured survey forms that are appropriate for the target audience and collect valid and reliable data.
Aims of the course	To teach sampling methods to select a sample in a statistical study, to use appropriate sampling methods and to learn how to design a survey.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code İST 2104	Course Unit Title EXPERIMENTAL DESIGN		Semester/Year Spring/ 2	Number of ECTS Credits 6	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	Associate Professor Ayşe BUGATEKIN				
Assistants	-				

Course content	The Experimental Design course teaches how to design experiments to obtain valid and reliable results in scientific research. Topics include generating hypotheses, determining dependent and independent variables, randomization, blocking, factorial designs, and statistical methods such as analysis of variance. The course includes practical work, focusing particularly on control groups, minimizing experimental errors, and data analysis techniques.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Experimental Design
2	Factorial Experimental Design - I
3	Factorial Experimental Design - II
4	Repeated Measures Design
5	Block Design
6	Latin Squares and Other Experimental Design Tools - I
7	Latin Squares and Other Experimental Design Tools - II
8	Experimental Design and Data Collection
9	Analysis of Experimental Results - I
10	Analysis of Experimental Results - II
11	Application and Project
12	Application and Project
13	Project Presentation
14	Project Presentation

Course Resources	Design and Analysis of Experiments" by Douglas C. Montgomery, "Experimental Design: Procedures for the Behavioral Sciences" by Roger E. Kirk, "Statistical Methods for Psychology" by David C. Howell
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Statistics and Basic Sciences	50
	Computer Sciences	30
	Programming Design	20
	Social Sciences	0

Course Outcome	Students gain the ability to plan, apply and analyze appropriate experimental design techniques to obtain reliable and valid results in scientific research.
Aims of the course	It aims to develop students' ability to design experiments that they can use effectively in the scientific research process by teaching them the basic principles, methods and applications of experimental design. Students will understand the basic concepts of experimental design and gain practical experience in planning, implementing and analyzing the results of various experiments.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			X
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST 2106	Mathematical Statistics-II		Spring/ 2	6	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Mathematical Statistics course covers the mathematical foundations of statistical theory. It covers topics such as probability theory, random variables, probability distributions, moments, sampling theory, estimation methods (method of moments, maximum likelihood estimation), confidence intervals, hypothesis testing and asymptotic theory. The course provides analytical thinking skills to understand and apply the mathematical foundations of statistical methods.
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Weekly Detailed Course Contents	
Week	Topic
1	T distribution, chi-square distribution, confidence interval for variance
2	F distribution, confidence interval for two variances
3	Introduction to parameter estimates, point estimates, and estimation methods
4	Maximum likelihood method
5	Newton-Raphson method, method of moments
6	December forecast
7	Properties of estimators: Unbiasedness, efficiency
8	Minimum variance, adequacy, consistency, Cramer Rao
9	Fisher information matrix and its applications
10	Limit distributions, probability convergence, convergence in distribution
11	Law of Large Numbers, Central Limit Theorem
12	Important inequalities: Chebyshev's Theorem, Markov's inequality
13	Goodness of fit test
14	Goodness of fit test

Course Resources	Mathematical Statistics with Applications - Dennis Wackerly, William Mendenhall, Richard L. Scheaffer, Probability and Statistics for Engineering and the Sciences - Jay L. Devore
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Statistics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	By understanding the mathematical foundations of probability and statistical inference, students become able to derive, analyze, and apply statistical methods.
Aims of the course	It introduces students to the theoretical and applied aspects of statistical distributions for discrete and continuous random variables. It also covers fundamental topics such as point and interval estimations, hypothesis testing, and regression analysis.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			X X
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			

17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST 2108	Statistical Software		Spring/ 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	Associate Professor Ayşe BUGATEKIN				
Assistants	-				

Course content	This course covers the basic features and applications of software used for statistical data analysis. In the first weeks, basic topics such as introduction to statistical package programs, data entry procedures, descriptive statistics, and creating graphs and tables are covered. In the middle weeks, normality tests, parametric and nonparametric hypothesis tests, variance analysis, and multiple comparison tests are applied. In the last weeks, advanced statistical methods such as repeated measures variance analysis, Kruskal-Wallis test, chi-square test, regression and correlation analysis are covered to develop students' software-supported analysis skills.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction of statistical package programs
2	Performing data entry
3	Calculating Descriptive Statistics

4	Creating a chart
5	Creating a table
6	Application of normality test
7	Application of Single and Two Sample Parametric Hypothesis Testing
8	Application of Single and Two Sample Nonparametric Hypothesis Testing
9	Analysis of variance and multiple comparison tests
10	Analysis of variance and multiple comparison tests
11	Variance in repeated measurements
12	Kruskal-Wallis test
13	Chi-square test
14	Regression and Correlation

Course Resources	Giri, N. C. (2003). <i>Multivariate statistical analysis</i>
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Statistics and Basic Sciences	50
	Computer Sciences	30
	Programming Design	20
	Social Sciences	0

Course Outcome	Students gain the ability to analyze data using statistical software, create statistical models, and visualize and interpret results.
Aims of the course	Introduction and use of statistical analysis programs
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			X
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
İST 2110	Econometric Models	Spring/ 2	3
Language of Instruction	Turkish		
Type of Course Unit	Compulsory		

Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	Associate Professor Ayşe BUGATEKİN				
Assistants	-				

Course content	The Econometric Models course teaches basic econometric methods and models used for analyzing economic data. The course covers topics such as simple and multiple regression analysis, model assumptions, heteroskedasticity and autocorrelation, as well as simultaneous equation models and time series analysis. Students develop the ability to interpret and analyze economic data by using theoretical knowledge in practical studies.
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Weekly Detailed Course Contents	
Week	Topic
1	Time Series Models
2	Time Series Models: Classification I
3	Time Series Models: Classification II
4	Univariate Time Series Models I
5	Univariate Time Series Models II
6	Multivariate Time Series Models I
7	Multivariate Time Series Models II
8	Volatility
9	Volatility Modeling
10	Time-varying Volatility Modeling
11	Univariate GARCH Models I
12	Univariate GARCH Models II
13	Multivariate GARCH Models I
14	Multivariate GARCH Models II

Course Resources	Gujarati, D. N. (çev. Şenesen, Ü., Şenesen, G. G.) (1999), Temel Ekonometri. Literatür Yayıncılık
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-

	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Statistics and Basic Sciences	50
	Computer Sciences	20
	Programming Design	0
	Social Sciences	30

Course Outcome	By gaining the ability to create, evaluate and interpret econometric models to analyze economic data, students can apply statistical methods to better understand economic relationships.
Aims of the course	Statistical modeling of econometric data and interpretation within the framework of statistical theories
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			X
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			

13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code İST 2112	Course Unit Title Statistical Quality Control		Semester/Year Spring/ 2	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	The Statistical Quality Control course teaches the application of statistical methods to ensure quality in manufacturing and service processes. Students gain the ability to effectively apply quality improvement techniques by learning topics such as the use of control charts, process capacity analysis, hypothesis testing, and sampling plans. The course emphasizes the use of statistical analysis in the management of quality control processes.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to quality control and basic concepts
2	Process control and quality management, definition and basic functions of the PSP program

3	Important statistical methods in quality control, concepts of mean, standard deviation, variance
4	How to perform statistical analysis on the PSPP program
5	Control charts and process monitoring
6	Xbar-R, Xbar-S control charts, how to create control charts with PSPP program
7	Process capability and Calibration, Cp, Cpk, Pp, Ppk indexes
8	How to conduct process capability analyses with the PSPP program
9	Quality planning and having a correct quality system, ISO quality standards and process development techniques
10	Data analysis and process improvement techniques with the PSPP program
11	Mid-term project
12	Mid-term project
13	Mid-term project
14	Mid-term project

Course Resources	Introduction to Statistical Quality Control - Douglas C. Montgomery, Quality Control and Industrial Statistics - Acheson J. Duncan
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

	Statistics and Basic Sciences	60
	Computer Sciences	20

Percentage of Course Category (%)	Programming Design	20
	Social Sciences	0

Course Outcome	Students gain the ability to evaluate, control and improve quality in production and service processes using statistical quality control methods. With this knowledge, they can make effective decisions on quality management and process optimization.
Aims of the course	To provide students with the ability to apply statistical analysis and quality control techniques using PSPP software. This course aims to teach quality control processes and tools, and to develop students' ability to analyze and interpret data. Students will be able to effectively manage quality control processes using basic and advanced features of PSPP software.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.		X	
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.		X	
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department		Date
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Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST 2114	System Reliability-II		Spring/ 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	Associate Professor Ayşe BUGATEKIN				
Assistants	-				

Course content	System Reliability-II course covers advanced topics on system reliability and durability. Students gain the ability to evaluate and improve the reliability of complex systems by learning reliability functions, maintenance strategies, failure analysis, life cycle costs, and reliability testing methods. In addition, integration of reliability principles in system design and risk analysis are also covered.
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Weekly Detailed Course Contents	
Week	Topic
1	System models with n to k outputs, Evaluation of system reliability
2	Relationship between n-to-k output G and n-to-k output F systems, Non-repairable n-to-k output system models
3	Repairable n-to-k output system models, Weighted n-to-k output system models
4	Design of systems with n to k outputs
5	Design of systems with n to k outputs
6	Sequential n to k output system models
7	Sequential n to k output system models
8	Multidimensional n to k output system models
9	Other n to k output system models
10	Other sequential n to k output system models
11	Multidimensional n to k output system models
12	Multidimensional n to k output system models
13	Project Studies
14	Student Project Presentations

Course Resources	"Mathematical Models For Systems Reliability" – Benjamin Epstein, Ishay Weissman, "System Reliability Theory" -Marvin Rausand, Marvin Rausand, "Optimal Reliability Modeling" WAY KUO, MING J. ZUO
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Statistics and Basic Sciences	80
	Computer Sciences	20
	Programming Design	0
	Social Sciences	0

Course Outcome	Students acquire the knowledge and competencies required to increase the resilience of complex systems by gaining the ability to evaluate the reliability of systems, develop maintenance strategies and apply reliability testing methods. With this knowledge, they can contribute to reliability-oriented design and management processes.
Aims of the course	It aims to teach students the basic and advanced concepts of the Z transform, its various application areas and how to apply this transform.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			

2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST 2116	Axiomatic Probability		Spring/ 2		3	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers	Associate Professor Ayşe BUGATEKİN					
Assistants	-					

Course content	The Axiomatic Probability course covers the basic principles and axioms of probability theory in a mathematical framework. Students can grasp the structural foundations of probability theory by learning topics such as basic concepts in the field of probability, union and intersection of events, conditional probability, independence and probability distributions. In addition, a theoretical and practical understanding is developed by examining the applicability of probability calculation methods together with the axiomatic structure.
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Weekly Detailed Course Contents	
Week	Topic
1	The concept of measurement and measured value. Measurable sets.
2	Algebra and sigma algebra structures.
3	Function that can be measured.
4	A measure of probability.
5	Distribution function
6	Empirical distribution function.
7	Probability function and its properties. Continuity theorem.
8	Concepts of liminf and limsup.
9	Independence of two events and complete independence.
10	Stieltjes integral and the exact expectation value formula.
11	Bernoulli's theorem and inequalities.
12	Poisson's theorem.
13	Moivre Laplace theorem
14	Normal distribution and its properties.

Course Resources	Olasılığa Giriş, Alifettah Shahbazov, Birsen Yayınevi.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the		

	instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Statistics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	By understanding the axiomatic basis of probability theory, students gain the ability to apply probability calculation methods and analyze relationships between events. This knowledge can be used effectively in statistical analysis and probability-based decision-making processes.
Aims of the course	Axiomatic justification of the concept of probability and definition of auxiliary materials for probability.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			X
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST 2118	Nonparametric Statistical Methods		Spring/ 2	5	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	Associate Professor Ayşe BUGATEKIN				
Assistants	-				

Course content	The Nonparametric Statistical Methods course teaches statistical analysis methods that do not require distributional assumptions. Students will learn topics such as nonparametric tests, sampling methods, ranking statistics, and hypothesis testing, and will gain the ability to develop more flexible and robust approaches to data analysis. This course focuses on applying appropriate analysis techniques, especially for small sample sizes or situations where the distribution is unknown.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic Concepts
2	Difference Between Parametric and Nonparametric Statistical Methods
3	Levels of measurement
4	One Sample Tests: Sign Test, Wilcoxon Signed Rank Test
5	Independent Two Sample Tests: Median Test, Mann-Whitney U Test
6	Independent Two Sample Tests: Mood Test, Moses Test
7	Dependent Two Sample Tests: Sign Test, Wilcoxon Sequential Sign Test
8	Application
9	Chi-square Tests for Independence
10	Independent k Sample Tests: Kruskal-Wallis Test (H Statistic)

11	Sampling distribution of H Statistic and its Approximation to Chi-Square Statistic
12	Friedman S Test
13	Sampling distribution of S Statistic and its Approximation to Chi-Square Statistic
14	Goodness of Fit Tests

Course Resources	W. J. Conover (1998). Practical Nonparametric Statistics,Wiley; 3rd edition.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Statistics and Basic Sciences	70
	Computer Sciences	30
	Programming Design	0
	Social Sciences	0

Course Outcome	Students gain the ability to analyze data without relying on distributional assumptions and to interpret results by applying nonparametric tests. This knowledge enables them to make effective statistical decisions, especially for small sample sizes or unknown distributions.
Aims of the course	To provide the ability to select appropriate tests and apply nonparametric tests in testing hypotheses.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
YMH2120	Database Management Systems		Spring / 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Database design, SQL query, normalization, relational database management systems and big data management topics are covered
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Weekly Detailed Course Contents	
Week	Topic
1	Providing information about database concepts
2	Database processing
3	Fundamentals of Relational Implementation
4	Fundamentals of Relational Implementation
5	Query Languages (MS SQL)
6	Query Languages (MS SQL)
7	Data Modeling, Normalization
8	Data Modeling, Normalization
9	Normalization
10	Databases and Internet Technology
11	Databases and Internet Technology
12	Managing Multi-User Databases
13	Managing Multi-User Databases
14	Managing databases with MS SQL

Course Resources	Kroenke, D. M., "Database Processing: Fundamentals, Design and Implementation", Prentice Hall
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the		

	teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	40
	Programming Design	20
	Social Sciences	0

Course Outcome	Understanding the basic concepts and components of database systems. Understanding hierarchical, network, relational and object-oriented database models. Basic principles, components and operation of relational databases. Ability to design databases using data modeling and ER (Entity-Relationship) diagrams.
Aims of the course	The primary purpose of this course is to explain database systems and teach the use of Entity - Relation and relational data models in order to produce logical solutions to problems on databases. It is planned to move on to stages such as creating tables to hold data with the given methods, establishing relationships between tables and making queries in the established database.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			

15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code İKT2124	Course Unit Title ECONOMIC SYSTEMS		Semester/Year Spring / 2	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	The basic concepts of economic systems, comparison of different systems such as capitalism, socialism and mixed economy, their historical development and their effects on today's economies are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction
2	Basic concepts: System, structure, regime

3	The birth of liberal capitalism
4	Theoretical background of liberal capitalism
5	Developments leading to the transition of capitalism to the interventionist stage
6	Theoretical foundations of interventionist capitalism
7	Interventionist capitalism in practice: Social State
8	Interventionist capitalism in practice: Social State
9	The crisis of interventionist capitalism; neoliberalism
10	Socialist thought, utopian socialists
11	Marxist Thought
12	Socialism in practice: USSR
13	Market socialism debates
14	Neoliberal Globalization

Course Resources	Nalân Ölmezoğulları (2009) İktisadi Sistemler ve Küreselleşen kapitalizm, Ezgi Yay. Bursa Gülten Kazgan(2002) “ Küreselleşme ve Yeni Ekonomik Düzen” İstanbul Bilgi Üniversitesi Yayınları
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	0
	Programming Design	0
	Social Sciences	50

Course Outcome	They can learn the transformative effects of political and economic institutions on the economic system They can analyze the institutions in the current capitalist economic order and learn their historical evolution They can compare the unique institutions in economic systems and explain the positive and negative aspects of these institutions They can explain the institutions that cause differences between current economic systems They can evaluate the historical evolution of transition economies
Aims of the course	The main purpose of this course is to provide information about theoretical debates on capitalism and socialism and to evaluate the performance of capitalism, socialism and transition economies in practice.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.		X	
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
MAT2136	Z Transform		Spring / 2	3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Basic concepts of the Z transform, difference equations and their applications in discrete-time systems are discussed.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Mathematical Fundamentals of the Z Transform
3	Properties of the Z Transform
4	Inverse Transform of the Z Transform
5	System Analysis and the Z Transform
6	Rational Z Transforms and Pole-Zero Analysis
7	Practical examples and applications
8	Applications of the Z Transform: Filter Design
9	Applications of the Z Transform: Signal Processing
10	Applications of the Z Transform: Control Systems
11	Applications of the Z Transform: Telecommunications
12	Advanced Topics and Special Techniques
13	Project Studies and Case Studies
14	Student Project Presentations

Course Resources	"Digital Signal Processing: Principles, Algorithms, and Applications" - John G. Proakis, Dimitris G. Manolakis "Discrete-Time Signal Processing" - Alan V. Oppenheim, Ronald W. Schafer
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	"Signals and Systems" - Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	To be able to explain the basic concepts and uses of the Z transform. To be able to understand the mathematical foundations of the Z transform. To be able to explain the role of the Z transform in system analysis. To be able to understand the statistical analyses related to the Z transform.
Aims of the course	It aims to teach students the basic and advanced concepts of the Z transform, its various application areas and how to apply this transform.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 5

Department Department of Statistics			Date
Course Unit Code İST3101	Course Unit Title Optimization	Semester/Year Fall / 3	Number of ECTS Credits 6
Language of Instruction	Turkish		
Type of Course Unit	Compulsory		
Prerequisites and co-requisites	-		
Address of course	-		

Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
4	4	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Optimization techniques, mathematical modeling, linear and nonlinear programming, constrained and unconstrained optimization methods, and engineering and economic applications are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	History of Optimization, Optimization Problems, Formulation of an Optimization Problem, Mathematical Model, Properties and Assumptions, Classification of Optimization Problems
2	Local and Global Optimality, Existence of Optimal Solution, Level Sets and Gradients, Convex Sets, Functions and Problems, First-order Characterization of a Convex Function, Second-order Characterization of a Convex Function
3	Algorithms and Complexity, Average Running Time, Random Algorithms, Fundamentals of Computational Complexity Theory, Complexity of Local Optimization, Optimal Methods for Nonlinear Optimization
4	Introduction to Linear Programming, Formulation of Linear Programming Model, Identification of Decision Variables, Formulation of Objective Function, Specification of Constraints
5	Formulation of Exact Linear Programming, Examples of Linear Programming Models, A Diet Problem, A Resource Allocation Problem, A Scheduling Problem, A Mixing Problem problem
6	A transportation problem, A production planning problem, Practical results of using linear programming models, Solving linear programming models with two variables graphically, Classification of linear programming models
7	The Simplex Method for Linear Programming, Standard form of linear programming, Simplex Method, Geometry of the Simplex Method, Simplex method for general linear programming
8	Two-phase simplex method, Big M method, Fundamental theorem of linear programming, Revised Simplex Method, Complexity of the Simplex Method
9	Duality in Linear Programming, Defining Binary Linear Programming, Constructing the dual of a general linear programming, Sensitivity Analysis, Changing the objective function coefficient of a basic variable, Changing the objective function coefficient of a non-basic variable
10	Sensitivity Analysis, Changing the column of a non-basic variable, Changing the right-hand side, Introducing a new variable, Introducing a new constraint
11	Unconstrained Optimization, Optimality Conditions, First-order necessary conditions, Second order optimality conditions, Using optimality conditions to solve optimization problems, Univariate Optimization Problems, Golden section search, Fibonacci search, Algorithmic Strategies for Unconstrained Optimization, Steepest Descent Method, Convex quadratic case
12	Newton Method, Levenberg-Marquardt Method, Conjugate Direction Method, Conjugate direction method for convex quadratic problems, Conjugate gradient algorithm, Non-quadratic problems, Quasi-Newton Methods, Rank-one correction formula
13	Constrained Optimization, Optimality Conditions, First-order necessary conditions, Second-order conditions
14	Duality

Course Resources	Numerical Methods and Optimization An Introduction
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Classification of optimization problems Concepts related to functions Algorithms Linear programming Optimization methods
Aims of the course	Understanding optimization techniques
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			

3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			X
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST3103	Regression		Fall / 3		5	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Linear and nonlinear regression models, parameter estimation, model fit, and predictive analysis are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Conditional expected value, regression concept and model building
2	Creating a simple linear regression model and finding the least squares estimators of the parameters, centralized model
3	Properties of the least squares estimators of the parameters
4	Estimating the error variance and examining the properties of the fitted regression line
5	Estimating the regression parameters and error variance with the maximum likelihood method
6	Hypothesis testing about the parameters, testing the significance of the regression
7	Preparing the ANOVA table and explaining how to use it, examining the multiple coefficient of determination
8	Sample application
9	Interval estimation about the parameters, interval estimation of the mean response, estimating new observations
10	Regression lines passing through the origin, examining the model assumptions (residual analysis), examining the heteroscedasticity situation, normal probability plot
11	Introducing outlier observations and influential observations and examining their effects on the least squares estimators
12	Creating a multiple regression model, matrix representation and regression Estimation of parameters
13	Examination of distributional properties of least squares estimators of regression parameters and estimation of error variance
14	Construction of ANOVA table in multiple regression and hypothesis testing about regression parameters

Course Resources	Montgomery, D. C., Peck, E. A., Vining, G. G. (2001), Introduction to Linear Regression Analysis, 3rd edition, John Wiley & Sons Inc.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least		

	YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Makes statistical inference (estimation, hypothesis testing, etc.). Produces solutions to problems of different disciplines using statistical techniques. Creates models and performs analysis using statistical package programs. Becomes aware of the interaction between disciplines related to statistics
Aims of the course	To create the necessary theoretical infrastructure, to be able to analyze the data that may be encountered in the public and private sectors, and to provide the knowledge, skills and practicality to interpret the analysis results.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			X
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST3105	Multivariate Normal Distribution		Fall / 3		5	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Basic properties of the multivariate normal distribution, covariance structure, linear transformations and their applications are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Density function and basic properties of multivariate normal distribution.
2	Example of two-variate normal distribution.
3	Variance covariance matrix.
4	Distribution of quadratic form
5	Partition of multivariate normal distribution: subvector variables.
6	Distribution of subvector variables.
7	Regression equation.
8	Characteristic function of multivariate normal distribution.
9	Estimation of parameters.

10	Testing the mean vector of random vector variable with multivariate normal distribution.
11	Hypothesis testing of covariance matrix.
12	Partition of covariance matrix.
13	Construction of principal components
14	Distribution of random vector variable under transformation.

Course Resources	Multivariate Statistical Inference. Narayan C. Giri · 2014, ISBN: 9781483263335, 1483263339
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	Learning the concept of random vector variables.
The way of processing course	Face to face

Relation of the course with program outcomes

Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title	Semester/Year		Number of ECTS Credits	
İST3107	Probability Problems	Fall / 3		4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Fundamental concepts of probability theory, probability distributions, stochastic processes, and their applications to real-world problems are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Series of events and binomial example
2	Simple random walk.
3	Gambler's problem.
4	Sequential dependence and Markov property.
5	Markov chain with discrete parameters and examples.
6	Markov chain with two states.
7	n-step transition probabilities.
8	Absorption probability.
9	Classification of states.
10	Examples of technical systems.
11	Birth-death process.
12	Concept of incoming current.
13	Use of difference equation in a probability problem.
14	Use of differential equation in a probability problem.

Course Resources	Olasılığa Giriş, Alifettah Shahbazov, Birsen Yayinevi.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least		

	YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Understanding of different solution methods. Reducing the solution of a problem to a probability problem. Understanding the structure of a random variable that depends on a parameter within the series it is connected to. Being able to define a random process axiomatically. Being able to make future predictions at any moment of a random process.
Aims of the course	Learning the solution techniques of different probability problems.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			

17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST3109	Experimental Design Applications with Package Programs		Fall / 3		4	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	Experimental design methods, analysis of variance and optimization techniques are applied using statistical package programs.
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Weekly Detailed Course Contents	
Week	Topic
1	Experimental design and basic concepts
2	Independent samples design, introduction to JASP and JAMOVİ programs and their basic functions
3	Repeated measures design, Factorial design and interactions
4	How to do experimental design analyses on JASP and JAMOVİ programs
5	Mixed design and analysis of interactions, Anova and Manova models
6	How to do mixed design analyses with JASP and JAMOVİ programs

7	Cross-validation and experimental design optimization, Control groups and balancing in experimental design
8	How to do cross-validation analyses with JASP and JAMOVİ programs
9	Interpretation and reporting of experimental design data, Ethical issues and experimental design
10	Visualization of results and reporting techniques with JASP and JAMOVİ programs
11	Semester project
12	Semester project
13	Semester project
14	Semester project

Course Resources	Statistical Analysis with JASP: A Guide for Students - Mark Goss-Sampson Learning Statistics with Jamovi: A Tutorial for Psychology Students and Other Beginners - Danielle J. Navarro, David R. Foxcroft
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	They will learn about the installation of JASP and Jamovi software and how to use the basic interface. They will be able to load data sets in JASP and Jamovi, perform data cleaning and transformation operations. They will be able to calculate basic statistical summaries of data (mean, median, standard deviation, etc.). They will be able to present data graphically and create different types of graphs (histogram, boxplot, scatterplot, etc.). They will develop their skills in solving statistical problems by practicing on real-world data sets.
Aims of the course	To develop students' statistical data analysis and visualization skills. This course aims to help students gain the ability to apply statistical methods and analysis, especially using JASP and Jamovi software. Using the user-friendly interfaces of these software, students will be able to perform data analysis easily and effectively.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST3111	Scale Development		Fall / 3	4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Scale development processes, validity and reliability analyses, factor analysis and psychometric tests are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Scale Development and Scale Types
2	Scale Development Process and Steps, Purposes and Importance of Scale Development
3	Conceptual Modeling for Scale Development
4	Approaches Recommended for Scale Development, Concepts of Reliability and Validity
5	Factor Analysis and Determination of Scale Factor Structure
6	Item Analysis and Scale Item Selection, Measurement Models in Scale Development Process
7	Content Validity, Structural Validity and Criterion Validity
8	Scale Application and Scale Validation, Ethical Issues in Scale Development Process
9	Statistical Analysis of Scale Development Results
10	Scale Development Applications and Examples, Interpretation and Reporting of Scale Development Results
11	Semester Project
12	Semester Project
13	Semester Project
14	Semester Project

Course Resources	Scale Development: Theory and Applications - Robert F. DeVellis Handbook of Psychological Testing - Paul Kline
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	To provide students with the knowledge and skills to develop reliable and valid scales to measure psychological, social or educational variables. This course aims to teach the conceptual and methodological steps in the scale development process. Students will learn topics such as writing scale items, conducting pre-tests, validity and reliability analyses, and will be able to design and evaluate their own scales.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			

5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST3113	Life Analysis and Censored Data		Fall / 3		4	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Survival analysis, methods for working with censored data, hazard functions, and parametric/nonparametric models are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Survival Analysis
2	Life Span Distributions
3	Continuous Models, Discrete Models
4	Data Structure
5	Introduction to Censoring
6	Survival Curve Comparison Tests
7	Right Censoring
8	Right Censoring, Left Censoring
9	Survival Distributions
10	Maximum Likelihood Method in Full and Censored Sample Cases
11	Parameter Estimation for the Weibull Distribution
12	Parameter Estimation in the Full Sample Case
13	Parameter Estimation in the Censored (Incomplete) Sample Case
14	Application

Course Resources	Textbooks, online notes, related articles
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Understanding survival data, the roles censorship plays, Survival and danger functions Graphs survival data and Kaplan-Meier curve
Aims of the course	This course includes topics such as; Censored data types, Organization and visualization of survival data, Comparison of survival distributions, Survival regression analysis.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST3115	Machine Learning		Fall / 3	4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Supervised and unsupervised learning algorithms, classification, clustering, deep learning and data mining techniques are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Introduction to Machine Learning with a Package Program
3	Data Preprocessing and Basic Statistics
4	Linear Regression and Performance Evaluation
5	Logistic Regression and Classification
6	Decision Trees and Ensemble Methods
7	Support Vector Machines (SVM)
8	K-Nearest Neighbor (KNN) and Naive Bayes
9	Clustering Techniques
10	Dimensionality Reduction Techniques
11	Introduction to Neural Networks and Deep Learning
12	Convolutional Neural Networks (CNN)
13	Model Evaluation and Hyperparameter Optimization
14	Student Project Presentations

Course Resources	Introduction to Machine Learning with Python" by Andreas C. Müller and Sarah Guido "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géron
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	They will understand machine learning concepts and algorithms. They will be able to develop models using various machine learning algorithms. They will be able to use machine learning packages effectively in various programming languages. They will be able to apply techniques to evaluate and improve model performance. They will be able to develop machine learning solutions for real-world problems.
Aims of the course	To teach students the basic concepts and algorithms in the field of machine learning and to enable them to put this knowledge into practice using various software packages.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			

4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			

Contribution of the course: 1:No 2:Partially 3:Completely

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
IST3117	Distribution Functions		Fall / 3	4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Probability distribution functions, continuous and discrete distributions, moments and probability density functions are examined.
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Weekly Detailed Course Contents

Week	Topic
1	Calculation of parameters of distribution defined by probability table.
2	Binomial and distributions defined depending on binomial.
3	Poisson distribution and binomial approximation to Poisson.
4	Sum of Bernoulli trials with different parameters.
5	Convolution formula for discrete distributions.
6	Exponential distribution.
7	Convolution formula for exponential distribution and Erlang distribution.
8	Normal distribution and T distribution.
9	Square of standard normal: Chi-square distribution.
10	Ratio of two chi-square distributions: F distribution.
11	Approximation of binomial to normal distribution.
12	Central limit theorem and approximation according to distribution.
13	Law of large numbers.
14	Applications of strengthened law of large numbers and central limit theorem.

Course Resources	Olasılığa Giriş. A. A. Shahbazov, Birsen yayınevi
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Defines events that occur with a variable whose distribution is known and calculates probabilities. Tests which distribution a random variable fits. Calculates the distribution parameters of a variable whose indicators are known. Can establish transitions between distributions.
Aims of the course	Introducing different distribution functions and showing how to use them in practice
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.		X	
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics		Date
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Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits		
IST3119	Programming with SAS	Fall / 3	4		
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Data analysis, statistical modeling, macro programming and reporting techniques are applied using the SAS programming language.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Data Entry and Working with Data Sets
3	Data Manipulation and Data Cleaning
4	Data Transformation and Formatting
5	Statistical Analysis and Descriptive Statistics
6	Graphics and Data Visualization
7	Sample Applications
8	Macro Variables and Macro Programming
9	Advanced Data Manipulation Techniques
10	Advanced Statistical Analysis
11	Data Mining and Forecasting Models
12	Data Management and Working with Databases
13	Project Studies and Case Studies
14	Student Project Presentations

Course Resources	The Little SAS Book: A Primer" - Lora D. Delwiche, Susan J. Slaughter "SAS Certification Prep Guide: Base Programming for SAS 9" - SAS Institute
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40

	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	To be able to explain the basic concepts and uses of SAS. To be able to create SAS data sets and use data entry methods. To be able to perform data cleaning and transformation operations using basic SAS functions. To be able to perform basic statistical analyses. To be able to perform advanced statistical analyses.		
Aims of the course	It aims to teach students the basic and advanced concepts of SAS programming, data management and analysis techniques.		
The way of processing course	Face to face		

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			

7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
YMH3121	Web Design and Programming		Fall / 3		3	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	HTML, CSS, JavaScript and dynamic web application development techniques and user experience design are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Internet, Intranet, Internet services and protocols, Web page hierarchical organization, format, page transitions, target audience, scope, quality, color harmony, placement, interaction, document preparation, animated text and images
2	HTML introduction, Web editor, links, text and line types, frames, tables, lists.
3	HTML forms, buttons and menus, placement of visual elements
4	Using CSS in HTML pages
5	HTML 5.0 structure and features
6	Javascript and JQuery basics, writing client-side and server-side scripts
7	Creating dynamic content with Javascript and JQuery
8	ASP.NET basics; web forms, code development, validation and rich controls
9	Creating templates using Master Page in ASP.NET
10	ASP.NET objects (Response, Request)
11	ASP.NET objects (Session, Application, Server)
12	Reading and writing files with ASP.Net
13	Database applications in ASP.NET
14	XML applications in ASP.NET

Course Resources	C# ile Asp.net 4.0, Zafer Demirkol, Kodlab 2011. Learning Web Design: A Beginner's Guide to (X)HTML, StyleSheets, and Web Graphics, Jennifer Niederst Robbins , O'Reilly Media,2007.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who		

	has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	Knows the basic concepts of Internet Programming and dynamic web programming structure. Knows simple input-output operations, loop and decision-making structures. Students are provided with information on how to use web development tools effectively, database management, security awareness and advanced web technology applications. Through the information provided in the program, students are provided with a strong foundation in web design and coding in their professional practices.
Aims of the course	The aim of the course is to teach the most widely used Web technologies today with sample projects. For this purpose, Internet, Intranet, Internet services and protocols. Image, graphic, animation, sound, image development software. Web page hierarchical organization, format, page transitions, target audience, scope, quality, color harmony, placement, interaction, document preparation, animated text and pictures. ASP.NET Basics Web editor, frames, tables, lists, forms, placement of visual elements, , links, text and line types, buttons and menus. Web area selection; domain name, quality, capacity, Internet service providers, database and web programming support, e-mail limit and cost. File transfer protocol and software, Internet service provider connection, web page loading and updating topics will be covered.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			X
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			

14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IKT3123	Turkish Economy		Fall / 3		3	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	The historical development of the Turkish economy, sector analysis, macroeconomic indicators and current economic policies are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction
2	Economic structure before the Republic
3	1923-1929: The founding years of the Republic
4	1930-1939: The period of statism
5	1940-1949: The years of World War II and after

6	1950-1960 First half of the Period: Liberal economy period
7	2002nd half of the Period: Return to protectionist policies in foreign trade
8	1960-1980: Planned development period
9	1980-1989: The process of structural change towards the export-oriented industrialization model and market economy
10	1990s: The process of liberalization of capital movements and conjunctural policies
11	2000s: The goals and policies of the stand-by program in the period of 2000-2002
12	2000s: Economic crises of November 2000 and February 2001
13	2002 onwards: Economic policies of the period after the single-party government
14	2008 global The economic effects of the crisis and the Covid-19 pandemic process

Course Resources	İlker Parasız, Türkiye Ekonomisi, Ezgi Yayınevi
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	30
	Computer Sciences	0
	Programming Design	0
	Social Sciences	70

Course Outcome	Understanding that it is not possible to evaluate independently of the economic, political and social fields
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	Understanding the relationships between the ruptures seen in Turkey's economic policies and the paradigm changes experienced in the world Understanding the important changes that have occurred in Turkey's economic structure in terms of periods Being able to monitor the changes in Turkey's industrial strategy, development model, foreign trade regime and exchange rate system in periods Being able to make evaluations on Turkey's historical and current economic problems
Aims of the course	The main purpose of the course is to make a comprehensive evaluation of the Turkish Economy over time, without separating it from its historical context and taking into account the political/ideological conjuncture changes.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			X
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
ISG3125	Occupational Health and Safety		Fall / 3		3	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Occupational health and safety management systems, risk assessment methods and occupational safety legislation are discussed.
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Weekly Detailed Course Contents	
Week	Topic
1	Purpose, Scope, Definitions of Occupational Health and Safety
2	OHS Law No. 6331 and Employer's Obligations
3	OHS Law No. 6331 and Employer's Obligations
4	Labor Law No. 4857 and Employer's Obligations
5	Social Insurance and General Health Insurance Law No. 5510 and Employer's Obligations
6	Workplace Risks and Work Accidents
7	Duties, Authorities and Responsibilities of Joint Health and Safety Units
8	Duties, Authorities and Responsibilities of Workplace Health and Safety Units
9	Determination of Workplace Hazard Classes
10	Duties, Authorities, Responsibilities and Trainings of Occupational Safety Specialists
11	Duties, Authorities, Responsibilities and Trainings of Workplace Physicians and Other Health Personnel
12	Use of Personal Protective Equipment in Workplaces
13	Occupational Health and Safety Services to be Conducted by the Employer or Employer's Representative in Workplaces
14	Occupational Health of Employees And Security Trainings

Course Resources	6331 Sayılı İş Sağlığı ve Güvenliği Kanunu, 4857 Sayılı İş Kanunu, 5510 Sayılı SSGSS Kanun
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	30
	Computer Sciences	0
	Programming Design	0
	Social Sciences	70

Course Outcome	Gains related to OHS Law, Regulation and Legislation Historical process of OHS in the world and in Turkey, Evaluation of OHS Risks, Responsibilities of the state, employer and employee Gaining the ability to communicate effectively with professional and ethical responsibility awareness Increasing the knowledge related to OHS Regulation and Legislation
Aims of the course	To inform employers and employees about their duties, authorities, responsibilities, rights and obligations in order to ensure occupational health and safety in workplaces and to improve current health and safety conditions.
The way of processing course	Face to face

Relation of the course with program outcomes					
Learning outcomes			1	2	3
1	Explains the concepts and principles of probability and statistics.				

2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			X
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
YMH3127	Data Mining		Fall / 3		3	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Big data analysis, data mining algorithms, classification, clustering and pattern recognition techniques are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Data Warehousing
2	Data Mining
3	Classification with Decision Tree ID3
4	Classification with Decision Tree C4.5
5	Classification and Regression Trees Twoing Algorithm
6	Classification and Regression Trees Gini Algorithm
7	Memory Based Classification
8	KNN
9	Clustering K-Means Algorithm
10	Clustering Hierarchical Clustering
11	Association Rule
12	Association Rule Apriori Algorithm
13	Bayesian Classifier
14	Artificial Neural Networks

Course Resources	Jiawei Han and Micheline Kamber, <i>Data Mining Concepts and Techniques</i> , Morgan Kauffman. Margareth H. Dunham, <i>Data Mining Introductory and Advanced Topics</i> , Prentice Hall, Pearson Education.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who		

	has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	Understanding the basic concepts, processes and application areas of data mining. Ability to apply data cleaning, integration, transformation and reduction techniques. Analyzing data and extracting meaningful information with data discovery and data visualization techniques. Ability to follow current trends, technologies and research in the field of data mining.
Aims of the course	This course provides information about the methods and algorithms used during the collection, storage and analysis of data. It contains detailed information about the methods used in the literature and their application areas. Within the scope of the algorithms explained in the course, the effective use of the taught algorithms is measured with the requested project assignments.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code YBS3129	Course Unit Title Electronic Commerce and Electronic Business		Semester/Year Fall / 3	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Digital marketing, e-commerce infrastructures, online payment systems and electronic transformation processes for businesses are discussed.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	E-Commerce Business Models
3	E-Commerce Infrastructure and Technologies
4	Digital Payment Systems
5	E-Commerce Marketing Strategies
6	E-Commerce Analytics and Data Management
7	Data Analysis and Reporting
8	E-Business Strategies and Business Models
9	Customer Relationship Management (CRM) and E-Business
10	Logistics and Supply Chain Management
11	Legal and Ethical Issues

12	International E-Commerce
13	Future E-Commerce Trends
14	Student Project Presentation

Course Resources	"E-Commerce 2019: Business, Technology, and Society" - Kenneth C. Laudon, Carol Guercio Traver "Digital Business and E-commerce Management" - Dave Chaffey
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	30
	Computer Sciences	0
	Programming Design	0
	Social Sciences	70

Course Outcome	Define the concepts of e-commerce and e-business. Identify the technologies and tools required for e-commerce infrastructure. Explain the importance of logistics and supply chain management in e-commerce. Explain the basic concepts of international e-commerce. Gain hands-on experience by working on real-world e-commerce projects.
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Aims of the course	It aims to teach students the basic principles, technological infrastructure, business models and strategies of e-commerce and e-business.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			X
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
MAT3137	Numerical Analysis	Fall / 3	3
Language of Instruction	Turkish		
Type of Course Unit	Optional		
Prerequisites and co-requisites	-		

Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Numerical methods, numerical differentiation and integration, applications of linear algebra, and numerical optimization techniques are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Taylor expansion.
2	Newton's method of successive calculations.
3	Construction of polynomial with known fixed points.
4	Divided difference method
5	Approximate calculation of the root of the equation.
6	Solution of linear equation systems and Kramer system.
7	Least square method.
8	Big data problem: matrix decomposition.
9	Principal components.
10	Partial least square method.
11	Numerical differentiation.
12	Numerical integration, Stieltjes integral
13	Approximate calculation of factorial.
14	Markov inequality and its applications.

Course Resources	Numerical Analysis. Rainer Kress, Springer. ISBN: 9781461205999, 1461205999
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Can calculate the solution of an equation approximately. Can solve a problem that is converted to a regression model.
Aims of the course	To be able to design appropriate solutions for problems that do not have a definitive solution
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			

17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 6

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IST3102	Operations		Spirng / 3		6	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
4	4	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	Decision making processes, optimization techniques, linear programming and simulation methods are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Structure of decision problems, problem definition and model building
2	Introduction to linear programming and its solution with graphical method
3	Solution of linear programming problems with simplex method
4	Performing duality and sensitivity analysis after optimum solution
5	Computer application (Solution of linear programming problems and sensitivity analysis)
6	Integer programming and Gomory cutting plane algorithm
7	Sample applications
8	Transportation models and solution algorithms

9	Assignment models and solution algorithms
10	Transportation models and solution algorithms
11	Network analysis; creation and solution of network models
12	Network analysis; CPM method
13	Network analysis; PERT method
14	Cost-time relationship in project planning and acceleration of the project

Course Resources	Frederick S. Hiller, Gerald J. Lieberman - Yöneylem Araştırmasına Giriş Ahmet Öztürk - Yöneylem Araştırmasına Giriş
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Explains operations research techniques. Produces a mathematical model of quantitative problems encountered in social sciences using operations research methods. Solves modeled problems. Solves operations research problems with package programs. Interprets the obtained solutions.
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Aims of the course	To provide the necessary qualifications for mathematical modeling and solution of relevant problems using the taught techniques.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
IST3104	Prediction Theory	Spirng / 3	5

Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Statistical estimation methods, parameter estimation, bayesian approaches and forecasting techniques are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic concepts related to sampling theory
2	Distribution of the sampling mean
3	Distribution of the sampling mean and interval estimation
4	Point estimation
5	Best estimators and their properties
6	Adequate statistics
7	Point estimation methods
8	Interval estimation for the difference between population means
9	Distribution of the sampling variance and interval estimation
10	Sampling distribution and interval estimation for two variance ratios
11	Sampling distribution and interval estimation for the difference between two ratios
12	Maximum likelihood method
13	Least squares method
14	Least squares estimators

Course Resources	İstatistiksel Tahmin Teorisi (Süleyman Yavuz, Özge Akkuş Gazi Kitabevi (2016))
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-

	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Understanding of Sampling Method Estimating Population Parameters Estimating Distribution Parameters Determines confidence intervals in estimation, examines the goodness of fit of the model, performs hypothesis tests Understanding of the Least Squares method
Aims of the course	Introduction of Parameter Estimation Methods in Statistical Models
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			

9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
IST3106	Multivariate Statistical Analysis		Spirng / 3	5	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Multivariate data analysis, principal components analysis, discriminant analysis and factor analysis methods are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Principal Components Analysis, Necessity of principal components analysis, obtaining principal components.
2	Characteristics of principal components, determination of the number of principal components.
3	Factor Analysis, Purpose of factor analysis, similarity with principal components analysis.
4	Principal factor method, factor rotation and conceptual significance.
5	Principal components analysis and factor analysis with the help of relevant package programs.
6	Canonical Correlation: Concept of relationship and purpose of analysis, obtaining canonical correlations.
7	Significance checks and applications of canonical correlation coefficients.
8	Introduction to Discriminant Analysis:, Discriminant analysis in case of two groups.
9	Discriminant analysis and applications in case of more than two groups.
10	Similarity and distance measures.
11	Cluster Analysis and methods.
12	Use of package programs related to Cluster Analysis.
13	Multidimensional scaling methods.
14	Comparison of multidimensional scaling methods.

Course Resources	Alvin C. Rencher. Methods of Multivariate Analysis (2nd Edition) Wiley series in probability and mathematical statistics
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	Determines the structure of data formed by a large number of variables. Converts the structure of data formed by a large number of variables into a form as simple as possible. Uses multidimensional scaling methods. Decides which analysis is appropriate for multivariate data and can use the relevant packages.
Aims of the course	The aim of this course is to determine the structure of the data created by many variables and to transform it into a simple form, to decide which analysis will be appropriate to use, to comment on the relevant subject and to reach the right decision.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code IST3108	Course Unit Title Experimental Probability		Semester/Year Spring / 3	Number of ECTS Credits 4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	The concept of experimental probability, simulation techniques, Monte Carlo methods and applied probability analysis are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Concept of trust and risk. Definition of trust region as probability.
2	Conditional probability and Bayes theorem.
3	Classical frequentist approach and Bayes approach.
4	Concept of prior and posterior distribution.
5	Beta distribution and its properties.
6	Bayesian estimation method.
7	Goodness of fit tests for experimental distributions: Chi-Square test.
8	Goodness of fit tests for experimental distributions: Kolmogorov-Smirnov test.
9	Convolution formula.
10	Numerical characteristics of random variables.
11	Covariance and correlation.
12	Techniques of generating data from distribution.
13	Simulation logic.
14	Simulation scenario.

Course Resources	Olasılığa Giriş, Alifettah Shahbazov, Birsen Yayinevi
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	It obtains more information by matching data with theoretical structures. It increases the information obtained when a structured experiment is performed. It can reveal the relationships between events. It can produce data whose distribution it knows. It can construct a simulation.
Aims of the course	Finding the equivalents of experimental data in theoretical structures
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			

5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits		
İST3110	Distribution Functions of Two Variables		Spring / 3	4		
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						

Assistants	-
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Course content	Joint distribution functions, covariance, dependence structures and bivariate statistical analysis methods are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Joint probability table and conditional probability calculation.
2	Joint distribution of two variables with binomial and geometric distribution.
3	Two-variable normal distribution. Covariance matrix.
4	Two-variable exponential distribution.
5	Copula and its examples.
6	Conditional expected value and conditional variance.
7	Covariance function depending on the index in random variable series.
8	Conditional distribution.
9	Product moment and independence.
10	Finding the joint distribution of variables with known marginals.
11	Two-variable gamma distribution.
12	Two-variable logistic distribution.
13	Parametric regression model.
14	Parameter estimation in two-variable distribution.

Course Resources	Univariate Discrete Distributions. Norman L. Johnson v.d. 2005, ISBN: 9780471272465, 0471272469
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the		

	instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Understanding the concepts of independence and unrelatedness. Understanding the methods used in multivariate statistical analysis. Understanding the measures of relationship.
Aims of the course	To provide the basis for multivariate statistical analyses
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code IST3112	Course Unit Title Quality Assurance and Standards		Semester/Year Spring / 3	Number of ECTS Credits 4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Quality control methods, ISO standards, total quality management (TQM) and process improvement techniques are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Development Process of Standardization, Definition
2	Occupational Health and Safety Provisions
3	Subject, Objectives and Principles of Standardization
4	Benefits of Standardization to Manufacturers, Consumers and Economy
5	Turkish Standards Institute and Its Duties Types of Certification in Turkey
6	Regional and International Standardization Organizations National and International Metrology Calibration Studies
7	Definition of Quality, Concepts Related to Quality Relationships Between Concepts Related to Quality
8	Quality Approaches
9	Relations Between Quality and Productivity Quality Costs and Risks
10	Benefits of Quality Assurance
11	Total Quality Management
12	Quality Management System
13	ISO 9000 Standards Other Standards
14	ISO 9000 Standards Other Standards

Course Resources	Lecture Notes
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	0
	Programming Design	0
	Social Sciences	50

Course Outcome	Basic information about standardization, Necessity and importance of standardization, Importance of quality assurance, Implementing quality standards, Occupational standards.
Aims of the course	The easiest way to achieve the desired international standardization is to establish and implement an appropriate quality assurance system in the business. The aim is to provide the student with skills related to quality assurance and standards in business life.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			

3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			X
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
IST3114	Statistical Randomness Tests		Spring / 3		4	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						

Assistants	-
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Course content	Randomness tests, hypothesis tests, permutation and simulation-based randomness measures are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	What is Cryptology?
2	Cryptographic applications
3	Encryption Algorithms
4	Randomness
5	Random Number Generators
6	Frequency (Monobits) test
7	Frequency test within a block
8	Runs test
9	Longest ones test in a block
10	Binary matrix rank test
11	Discrete fourier transform (Spectral) test.
12	Strategies for Statistical Analysis of an RNG
13	Alternative Stat. Tests and Test Suites
14	Alternative Stat. Tests and Test Suites

Course Resources	Textbooks, online notes, related articles
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who		

	has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	You will learn about randomness. You will have an idea of why and how random numbers are generated. You will learn how to test whether the random numbers obtained are truly random.
Aims of the course	The aim of this course is to learn the concepts of random number generators, randomness tests, random number generation appropriate to distributions, and data generation appropriate to statistical models.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST3116	R Programming		Spring / 3	4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Data analysis, statistical modeling, data visualization and machine learning applications are performed using the R programming language.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to R Programming
2	Data Structures and Functions
3	Data Manipulation
4	Data Visualization - I
5	Data Visualization - II
6	Reading and Writing Data
7	Statistical Analysis - I
8	Statistical Analysis - II
9	Reporting and Documentation
10	Data Mining and Machine Learning
11	Application: Project Start
12	Student Project Development
13	Student gain the ability to understand and use basic data structures and functions using the R programming language. Project Development
14	Student Project Presentation

Course Resources	Arslan, İ. (2015). R ile istatistiksel programlama. Pusula.
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	<i>Özkan, B., & Özkan, Y. (2017). R ile Programlama, 1. Papatya Yayıncılık Eğitim, İstanbul, Türkiye.</i>
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	Gaining the ability to understand and use basic data structures and functions using the R programming language. Gaining the ability to understand basic statistical concepts and perform statistical analysis using R. Learning and applying the basics of data mining and machine learning. Gaining the ability to develop and present projects by analyzing real-world data sets.
Aims of the course	It aims to provide students with data analysis and visualization skills using the R programming language. It is aimed that students will gain the ability to manipulate real-world data sets, perform statistical analysis and visualize results effectively by developing basic R programming skills.
The way of processing course	Face to face

Relation of the course with program outcomes

Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics			Date
Course Unit Code İST3118	Course Unit Title Data Analysis in Repeated Measurements	Semester/Year Spring / 3	Number of ECTS Credits 4
Language of Instruction	Turkish		
Type of Course Unit	Optional		
Prerequisites and co-requisites	-		

Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Statistical methods for repeated measures data, analysis of variance, mixed effects models, and longitudinal data analysis are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Data Analysis in Repeated Measures
2	Planning a Repeated Measures Design
3	Analysis of Variance (ANOVA) Basics
4	Application of ANOVA in Repeated Measures - I
5	Application of ANOVA in Repeated Measures - II
6	Modeling Responses in Repeated Measures - I
7	Modeling Responses in Repeated Measures - II
8	Modeling Responses in Repeated Measures - III
9	Modeling Responses in Repeated Measures - IV
10	Modeling Responses in Repeated Measures - V
11	Application and Project
12	Application and Project
13	Student Project Presentation
14	Student Project Presentation

Course Resources	"Applied Multivariate Statistical Analysis" by Richard A. Johnson and Dean W. Wichern <i>"Statistical Methods for the Analysis of Repeated Measurements" by Charles S. Davis</i>
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-

	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	Understanding the definition and importance of repeated measures data. Learning basic statistical concepts and methods related to repeated measures. Creating and evaluating complex models. Performing repeated measures analysis on real data sets and reporting findings. Performing repeated measures data analysis using statistical analysis software (R, SPSS, SAS, etc.).
Aims of the course	The aim is to teach the basic principles of repeated measures designs, analysis methods and the correct interpretation of these analyses. Students will be able to identify problems they may encounter when working with repeated measures data, select appropriate analysis techniques and apply these techniques to effectively interpret the results.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			

12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits		
IST3120	Order Statistics		Spring / 3	4		
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	Basic concepts of order statistics, distributions of order statistics, and rank-based tests are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Basic concepts of probability, discrete, continuous and mixed distributions
2	Estimation, Experimental Distribution Function, Hypothesis Testing, Confidence Interval, Likelihood

	Function
3	Distribution of Order Statistics, Joint Distribution Function of Two Order Statistics, Conditional Distribution Functions of Order Statistics
4	Some Properties of Order Statistics, Distributions of Median and Some Other Statistics
5	Marginal Distribution of Discrete Order Statistics, Joint Distribution of Discrete Order Statistics
6	Dependency Structure, Range in Distribution
7	Geometric Order Statistics, Order Statistics obtained from samples drawn without replacement
8	Order Statistics from Bernoulli, Binomial Distribution
9	Order Statistics from Poisson Distribution
10	Order Statistics from Exponential and Uniform Distribution
11	Order Statistics from Logistic and Normal Distribution
12	Order Statistics Data Types, Order Statistics and Adequacy
13	Maximum Likelihood Estimation, Linear Estimation of Location and Shape Parameters
14	Estimation of Order Statistics, Distribution-Independent Confidence and Tolerance Intervals, Goodness of Fit Tests

Course Resources	Textbooks, online notes, related articles
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

	Mathematics and Basic Sciences	100
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Percentage of Course Category (%)	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	To be able to obtain probability distributions for order statistics To be able to understand the dependency structures of order statistics To be able to classify order statistics data according to their different characteristics To be able to understand how order statistics are used in estimation, hypothesis testing and goodness of fit tests To be able to demonstrate the ability to solve problems related to order statistics
Aims of the course	In this course, students will learn the theoretical and conceptual aspects of order statistics. The course will teach the theoretical background of order statistics and provide practice with order statistics data.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
YMH3122	Data Processing		Spring / 3	3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Data cleaning, transformation, missing data management, and big data processing techniques are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Data Collection and Entry
3	Data Cleaning
4	Data Transformation
5	Data Visualization
6	Exploratory Data Analysis (EDA)
7	Applications with R and Python
8	Advanced Data Cleaning Techniques
9	Time Series Data Processing
10	Text Data Processing
11	Data Integration and Data Quality
12	Big Data Processing
13	Data Processing Projects and Applications
14	Student Project Work with R and Python

Course Resources	Data Science for Business" - Foster Provost, Tom Fawcett "Python for Data Analysis" - Wes McKinney "R for Data Science" - Hadley Wickham, Garrett Golemund
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	To be able to explain the general structure of the data processing process To be able to define various data collection techniques. To be able to read and import data from different data sources. To be able to explain the importance of data visualization. To be able to develop application skills by doing project work with R and Python
Aims of the course	It aims to teach students data processing processes and techniques, data cleaning, transformation, analysis and visualization methods.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			

5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits		
YBS3124	Decision Support Systems for Businesses	Spring / 3	3		
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-

Name of Lecturers	
Assistants	-

Course content	Decision support systems, data analytics, optimization and artificial intelligence-based decision mechanisms in businesses are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Decision Making Process and Models
3	Data Management and Data Warehouses
4	Business Intelligence and Analytics
5	Modeling and Simulation
6	Optimization and Decision Support
7	KDS Software and Applications
8	Comparison of KDS software
9	Big Data and KDS
10	Cloud Computing and KDS
11	Artificial Intelligence and Decision Support Systems
12	Case Studies and Applications
13	Project Studies and Presentations
14	Student Project Presentations

Course Resources	Decision Support Systems: Concepts and Resources for Managers" by Daniel J. Power Decision Support and Business Intelligence Systems" by Efraim Turban et al.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be		

	evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	0
	Programming Design	0
	Social Sciences	50

Course Outcome	To be able to explain the definition and importance of decision support systems (DSS). To be able to define the role and usage areas of DDS in businesses. To be able to explain the stages of the decision-making process and the role of DDS in this process. To be able to understand how DDS is integrated into the decision-making process. To be able to understand the technologies and tools used in data management.
Aims of the course	It aims to teach students the basic concepts of DSS, its application areas and how to use it in businesses.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits		
İSG3126	Disaster and Emergency Management		Spring / 3	3		
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	Disaster risk analysis, crisis management, emergency planning and post-disaster recovery processes are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Emergency Management
2	Disaster and Emergency Risk and Disaster Risk Management
3	AFAD Organization and Duties
4	AFAD Organization and Duties
5	Disaster and Emergency Response Services
6	Disaster and Emergency Response Services
7	Emergencies in Workplaces and Precautions to be Taken
8	Emergencies in Workplaces and Evacuation Plans
9	Fire Protection of Buildings and Action Plan
10	Operator's Obligations for Preventing Major Industrial Accidents
11	Emergency Action Plan for Preventing Major Industrial Accidents

12	Preparation of Emergency Plan
13	Determination of Emergency Response Methods
14	Determination of Evacuation Methods

Course Resources	6331 Sayılı İş Sağlığı ve Güvenliği Kanunu, İSG Genel Müdürlüğü Acil Durum Planı Hazırlama Rehberi, Acil Durum Yönetimi, İşyerlerinde Acil Durumlar Hakkında Yönetmelik ve Ders Notları
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	30
	Computer Sciences	0
	Programming Design	0
	Social Sciences	70

Course Outcome	Basic concepts of Emergency Management and basic processes related to its operation Combating emergencies Preparing an emergency plan Provisions of the Regulation on Emergencies in Workplaces Determining preventive and restrictive measures
Aims of the course	To include the basic concepts of Emergency Management and the basic processes related to its operation, to ensure that they are informed and that they learn the obligations of the parties and occupational health and safety measures during the execution of these services.

The way of processing course	Face to face
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Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			X
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
YMH3128	Artificial Intelligence	Spring / 3	3
Language of Instruction	Turkish		
Type of Course Unit	Optional		
Prerequisites and co-requisites	-		
Address of course	-		

Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Artificial intelligence algorithms, machine learning, deep learning, natural language processing and decision-making systems are covered.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Problem Solving and Search Algorithms
3	Introduction to Machine Learning
4	Linear Regression and Logistic Regression
5	Decision Trees and Random Forests
6	K Nearest Neighbors (KNN) and Support Vector Machines (SVM)
7	Practical applications and examples
8	Clustering Algorithms
9	Introduction to Deep Learning
10	Convolutional Neural Networks (CNN)
11	Recurrent Neural Networks (RNN) and Natural Language Processing (NLP)
12	Reinforcement Learning
13	Artificial Intelligence Ethics and Future
14	Student Project Presentations

Course Resources	Artificial Intelligence: A Modern Approach" - Stuart Russell, Peter Norvig "Deep Learning" - Ian Goodfellow, Yoshua Bengio, Aaron Courville "Pattern Recognition and Machine Learning" - Christopher M. Bishop
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	To be able to define the basic concepts and terms in the field of artificial intelligence. To be able to explain the basic concepts and types of machine learning. To be able to apply linear and logistic regression models. To be able to explain the basic concepts and areas of use of deep learning. To be able to define the basic principles and architecture of artificial neural networks.
Aims of the course	It aims to teach students the basic and advanced concepts of artificial intelligence, various artificial intelligence algorithms and how to implement these algorithms.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			

16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistic			Academic Year	Date	
Course Unit Code YBS 3130	Course Unit Title Information Systems Security and Risk Management Compulsory		Semester/Year 5 / 3	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	-				
Assistants	-				

Course content	To provide students with an indepth understanding and practical skills in information systems security and risk management.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Threats and Vulnerabilities
3	Risk Management and Assessment
4	Information Security Policies and Standards
5	Cryptography and Data Security
6	Network Security
7	Access Control and Identity Management

8	Identity management and MFA applications
9	Incident Management and Breach Response
10	Security Audits and Tests
11	Cloud Security
12	Mobile and Application Security
13	Sustainable Security and Education
14	Student project presentations

Course Resources	Computer Security Basics" by Rick Lehtinen and Deborah Russell (Chapter 1) "The Basics of Information Security" by Jason Andress (Chapter 2)
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	0
	Programming Design	0
	Social Sciences	50

Course Outcome	Students have basic knowledge about the theory of Abstract algebra.
Aims of the course	1. Understanding basic concepts of information security and risk management. 2. Use basic network security concepts and tools. 3. Identifying threats and vulnerabilities to information systems

	4. Gaining the ability to create a risk matrix and manage risks. 5. Gaining the ability to create and implement information security policies.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistic		Academic Year	Date
Course Unit Code MAT 3138	Course Unit Title TRANSFORMATIONS	Semester/Year 5 / 3	Number of ECTS Credits 3
Language of Instruction	Turkish		
Type of Course Unit	Optional		

Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers	-				
Assistants	-				

Course content	To provide the ability to apply transformations.
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Weekly Detailed Course Contents	
Week	Topic
1	Generating function and examples
2	Characteristic function and inverse transform
3	Uniform distribution and its applications
4	Generalized function
5	Power series
6	Fourier expansion using generalized function
7	Fourier transform and Fourier integral transform
8	Introduction to Wavelet transform
9	Different Wavelet transforms
10	Discrete Wavelet Transform
11	Bernstein Polynomial
12	MITTAG-LEFFLER operator
13	Growth curves
14	Orthogonal polynomials and bases

Course Resources	Textbooks and notes: Basic types of transformations, transformation matrices, and example problems.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-

	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	

Course Outcome	Students have basic knowledge about the theory of Abstract algebra.
Aims of the course	1. Define and apply basic geometric transformations such as translation, reflection, rotation and scaling. 2. Can use matrices representing two-dimensional transformations and calculate transformations with these matrices. 3. Can produce solutions to real world problems using transformations. 4. Be able to apply the concepts of kernel function and basis function.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			

14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 7

Department			Academic Year		Date	
Department of Statistic						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST 4101	IST4101 Discrete Parameter Markov Chains		7 / 4		6	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
4	4	0	-		-	-
Name of Lecturers	-					
Assistants	-					

Course content	To be able to make statistical predictions by establishing probabilistic models of real problems.
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Weekly Detailed Course Contents	
Week	Topic
1	Definition, classification, numerical characteristics and examples of stochastic processes.
2	Finite state discrete parameter stochastic processes and transition probabilities between states.
3	Discrete parameter Markov chain, one-step transition probabilities and initial distribution.

4	High-step transition probabilities and classification of states.
5	Independent increments stochastic process and random walk example.
6	Markov chain with absorbing state and probabilities of being absorbed
7	Limit distribution of stochastic process and game problem.
8	Kolmogorov's difference equations.
9	Branching processes.
10	Two-state Markov chain.
11	Birth-death process
12	The importance of birth-death process in Markov tail models.
13	Introduction to continuous parameter Markov chain
14	Stochastic process with Poisson distribution and counting problem.

Course Resources	Probability and Random Processes, Geoffrey Grimmett ve David Stirzaker, Oxford üniversitesi press.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	0
	Programming Design	0
	Social Sciences	50

Course Outcome	To be able to make statistical predictions by establishing probabilistic models of real problems.
Aims of the course	1. Constructs a probability model of a real problem. 2. It can make statistical predictions through probability models. 3. Can decide whether the approach to any problem is probabilistic or deterministic.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistic		Academic Year	Date
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits

İST 4103		Report Writing and Presentation Skills		7 / 4		6	
Language of Instruction		Turkish					
Type of Course Unit		Compulsory					
Prerequisites and co-requisites		-					
Address of course		-					
Local Credit		Theoretical	Practical	Laboratory		Presentation	Project
3		3	0	-		-	-
Course content	In this course, students learn how to make an effective presentation of the project they have completed.						

Weekly Detailed Course Contents

Week	Topic
1	Course Introduction and Basic Concepts
2	Academic Writing and Technical Writing Rules
3	Data Collection and Organization
4	Building Blocks of the Report (Sections)
5	Bibliography and Citation Technique
6	Use of Graphs and Tables
7	Language and Style
8	Editing and evaluating a written report
9	Presentation Preparation: Visual Support Tools
10	Presentation Techniques and Body Language
11	Dealing with Difficult Audiences
12	Practical Presentation Studies
13	Report and Presentation Evaluation Criteria
14	Final Presentations

Course Resources	"Academic Writing and Presentation Techniques" Ali Öztürk "Effective Presentation Techniques" Dale Carnegie
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-

	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	20
	Computer Sciences	30
	Programming Design	0
	Social Sciences	50

Course Outcome	This course aims to develop students' effective report writing and presentation skills. It teaches technical and academic writing rules, presentation preparation techniques enriched with visual supports, and effective communication methods.
Aims of the course	1. Can prepare reports by learning academic and technical writing rules. 2. It can collect and analyze data and create a structured report. 3. Can use bibliography and citation techniques appropriate for different reporting types. 4. Can make a successful presentation using effective communication, body language and tone of voice techniques. 5. Can acquire skills in interacting with audiences and dealing with difficult questions.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			

11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			X
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Academic Year	Date	
Department of Statistic					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST 4105	Research Methods in Social Sciences		7 / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Selective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Course content	Quantitative and qualitative research methods, data collection techniques, sampling strategies and analysis processes are examined.				
Weekly Detailed Course Contents					
Week	Topic				
1	Research in Social Sciences				
2	Research Process and Determining Research Hypothesis				
3	Types of Research				
4	Literature Review and Management of Resources				
5	Research Design and Ethical Principles				
6	Data Collection Techniques (Quantitative Methods)				
7	Data Collection Techniques (Qualitative Methods)				
8	Midterm exam or project evaluation for research design				
9	Quantitative Data Analysis				

10	Qualitative Data Analysis
11	Mixed Methods Research
12	Presenting and Interpreting Research Findings
13	Research Report Writing and Publication Process
14	Submission of research proposals (student projects)
Course Resources	Karasar, N. (2022). Scientific Research Method. Nobel Publishing Distribution.

Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		
Percentage of Course Category (%)	Mathematics and Basic Sciences	50	
	Computer Sciences	0	
	Programming Design	0	
	Social Sciences	50	
Course Outcome	Application of research methods used in social sciences.		
Aims of the course	1. Will gain the ability to determine the research problem, develop hypotheses and plan the research process. 2. Will gain the ability to conduct literature review and use academic resources effectively 3. Apply quantitative and qualitative data collection techniques and evaluate the advantages and limitations of these techniques. 4. Select and apply appropriate techniques to analyze the collected data.		
The way of processing course	Face to face		

Relation of the course with program outcomes

Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			X
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Academic Year	Date	
Department of Statistic					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST 4107	BIOSTATISTICS		7 / 4	3	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
Course content		Application of statistical methods to the health field.			
Weekly Detailed Course Contents					
Week	Topic				
1	Definition of Statistics and Biostatistics; Descriptive Statistics Data.				
2	Classification of Average, Location Parameters, Histogram, Bar Chart, Leaf Chart, etc.; Descriptive Statistics.				
3	Distribution; Box-Plot Graphics; Error Bar etc. Examples; Examination with the Help of Tables and Graphs.				
4	Theoretical Distributions.				
5	Tests and Normality Graphs.				
6	Sampling Distributions and Confidence Intervals.				
7	Research and Sampling Methods.				
8	Introduction to Hypothesis Testing				
9	Hypothesis Tests (Single Sample Tests)				
10	Hypothesis Tests (Independent Two Sample Tests)				
11	Hypothesis Tests (Dependent Two Sample Tests)				
12	Correlation and Correlation Coefficient Tests				
13	Simple and Multivariate Linear Regression Analysis				
14	Risk Measures.				
Course Resources		Biostatistical Analysis, Books a la Carte Edition, Jerold H. Zar, Pearson, 2014.			
Assessment Methods and Criteria		In-Term studies	Quantity	Percentage (%)	
		Mid-Term Exams	1	40	
		Quizzes	-	-	
		Assignments	-	-	
		Projects	-	-	
		Term assignment	-	-	
		Laboratory	-	-	
		Other	-	-	
		Final exam	1	60	
On Assessment Methods and Criteria		A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.			

Percentage of Course Category (%)	Mathematics and Basic Sciences	20		
	Computer Sciences	30		
	Programming Design	0		
	Social Sciences	50		
Course Outcome	Application of research methods used in social sciences.			
Aims of the course	1. They understand the importance of statistical methods in studies. 2. They learn to decide on a sufficient sample size for a study. 3. They gain the ability to choose the right statistical method. 4. They learn to analyze and interpret data using statistical methods. 5. They learn to evaluate with statistical software.			
The way of processing course	Face to face			
Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistic		Academic Year	Date
Course Unit Code IST 4109	Course Unit Title RISK ANALYSIS	Semester/Year 7 / 4	Number of ECTS Credits 4

Language of Instruction		Turkish				
Type of Course Unit		Optional				
Prerequisites and co-requisites		-				
Address of course		-				
Local Credit		Theoretical	Practical	Laboratory	Presentation	Project
3		3	0	-	-	-
Course content		Identifying, assessing, managing and controlling risks.				
Weekly Detailed Course Contents						
Week	Topic					
1	Introduction and basic concepts					
2	Risk and trust as random variables					
3	Statistically the risk function, probabilistically the confidence function					
4	Hazard rate					
5	Some ratios used as statistics					
6	Risk identification techniques					
7	Risk as data					
8	Acceptable risk					
9	Risk Assessment and Measurement					
10	Risk Response Strategies					
11	Risk Monitoring and Control					
12	Sectoral Risk Analysis					
13	Enterprise Risk Management					
14	Preventable risks					
Course Resources		"Risk Management" by Crouhy, Galai, and Mark, Chapter 1 "Fundamentals of Risk Management" by Paul Hopkin, Chapter 1				
Assessment Methods and Criteria		In-Term studies			Quantity	Percentage (%)
		Mid-Term Exams			1	40
		Quizzes			-	-
		Assignments			-	-
		Projects			-	-
		Term assignment			-	-
		Laboratory			-	-
		Other			-	-
		Final exam			1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.			
Percentage of Course Category (%)	Mathematics and Basic Sciences	20		
	Computer Sciences	30		
	Programming Design	0		
	Social Sciences	50		
Course Outcome	Application of research methods used in social sciences.			
Aims of the course	1. Understanding and Defining the Concept of Risk 2. Implementing Risk Management Processes 3. Using Risk Identification and Assessment Techniques 4. Developing Risk Response Strategies			
The way of processing course	Face to face			
Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST4111	Robust Estimation Methods		Fall / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Outlier robust estimation methods, robust regression, and robust estimation techniques in statistical models are discussed.
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Weekly Detailed Course Contents	
Week	Topic
1	Overview of datasets, getting to know datasets, outlier analysis
2	Location and scale parameters for a dataset, determining the effects of outliers
3	Basic robust estimation methods for location and scale parameters
4	Basic robust estimation methods for location and scale parameters
5	Using M, S, MM estimator families for location and scale parameters
6	Using MM-Liu, Huber estimator families for location and scale parameters
7	Getting to know methods for robustness measurement
8	Midterm exam
9	Application of robustness measures such as influence function, breakpoint, maximum asymptotic bias to robust estimation methods of location and scale parameters
10	Using robust methods in regression models
11	Using robust methods in regression models
12	Using robust methods in regression models
13	R applications
14	R applications

Course Resources	Rousseeuw, P. J., & Leroy, A. M. (2005). Robust regression and outlier detection. John wiley & sons
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	Sonnberger, H. (1989). Robust Regression and Outlier Detection
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	Can identify outliers in data Recognize basic robust estimation methods Can decide which robust method can be applied to a data set containing outliers Can calculate robust estimators, can perform robust regression analysis Can perform R applications.
Aims of the course	Understand estimation methods for datasets containing outliers (including multidimensional datasets)
The way of processing course	Face to face

Relation of the course with program outcomes					
Learning outcomes			1	2	3
1	Explains the concepts and principles of probability and statistics.			X	

2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title	Semester/Year		Number of ECTS Credits	
İST4113	High Dimensional Covariance Estimates	Fall / 4		4	
Language of Instruction	Turkish				
Type of Course Unit	Optional				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Covariance matrix estimation, spectral methods and applications in high-dimensional data are examined.
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Weekly Detailed Course Contents	
Week	Topic
1	Overview of high-dimensional data examples and problems encountered in their analysis
2	Maximum likelihood estimator of covariance matrix in high-dimensional data
3	Eigenvalue and eigenvector calculation, condition number
4	Singular matrix problem
5	Examination of the effects of singularity on the results of multivariate analysis principal component analysis example
6	Application on gene data
7	Shrinkage method for covariance matrices
8	Midterm exam
9	Empirical Bayes estimator, eigenvalue, eigenvector, condition number review
10	Convex Sum estimator, eigenvalue, eigenvector, condition number review
11	Stipulated Ridge, Stipulated diagonal estimators, eigenvalue, eigenvector, condition number review
12	Oracle estimator, eigenvalue, eigenvector, condition number review
13	Applications on calculation and principal component analysis with Matlab
14	Applications on calculation and principal component analysis with Matlab

Course Resources	Lam, C. (2020). High-dimensional covariance matrix estimation. Wiley Interdisciplinary reviews: computational statistics, 12(2), e1485.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	Examining the covariance structure in high-dimensional data and solving the singular covariance problem
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST4115	Statistical Analysis with MATLAB		Fall / 4		4	
Language of Instruction	Turkish					
Type of Course Unit	Optional					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	Basic and advanced statistical analysis, data visualization and modeling techniques are applied using MATLAB.
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Weekly Detailed Course Contents	
Week	Topic
1	MATLAB interface, program introduction, basic operators
2	Functions and arithmetic operations in MATLAB
3	Data input and output
4	Data merging and splitting
5	Necessary tools for graph drawing
6	Calculating and interpreting descriptive statistics of data structure
7	Application and topic repetition
8	Single sample hypothesis testing with Matlab
9	Two sample hypothesis testing with Matlab
10	Analysis of variance and multiple comparison tests with Matlab
11	Introduction to linear models

12	Linear models Developing students' knowledge and skills in statistical analysis with MATLAB
13	Modeling functions
14	Statistical toolbar functions

Course Resources	Giri, N. C. (2003). Multivariate statistical analysis
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	Ability to apply basic arithmetic operations and basic operators in Matlab Creation of descriptive statistics Ability to apply hypothesis tests Ability to apply variance analysis Ability to apply linear models
Aims of the course	Developing students' knowledge and skills in statistical analysis with MATLAB
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics		Date	
Course Unit Code İST4117	Course Unit Title Operations Applications with Package Programs	Semester/Year Fall / 4	Number of ECTS Credits 4
Language of Instruction	Turkish		
Type of Course Unit	Optional		
Prerequisites and co-requisites	-		
Address of course	-		
Local Credit	Theoretical	Practical	Laboratory
			Presentation
			Project

3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	Operations research techniques, optimization algorithms and decision-making processes are analyzed with statistical package programs.
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to operations research programs
2	Introduction to operations research, basic concepts
3	Modeling of simple linear programming problems.
4	Solving linear programming problems using the simplex method.
5	Duality and sensitivity analysis applications
6	Transportation problems and solution methods
7	Assignment problems and solution techniques
8	Network models and solution techniques
9	Decision theory and decision trees
10	CPM (Critical Path Method) and PERT (Program Evaluation and Review Technique)
11	Inventory models and stock control systems.
12	Queue theory and applications.
13	Multi-criteria decision making techniques.
14	General review and application

Course Resources	Giri, N. C. (2003). <i>Multivariate statistical analysis</i>
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least		

	YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	30
	Programming Design	30
	Social Sciences	0

Course Outcome	Ability to perform programming data entry Ability to apply the Simplex method Ability to apply transportation and assignment problems Ability to apply CPM and PERT methods Ability to apply queuing theory
Aims of the course	Introduction and use of operations research programs
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			X
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits		
YMH4119	Data Analysis with Artificial Intelligence		Fall / 4	4		
Language of Instruction	Turkish					
Type of Course Unit	Selective					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Basic Methods in Data Analysis
3	Machine Learning and Data Analysis
4	Linear Regression and Applications
5	Logistic Regression and Classification Techniques
6	Decision Trees and Ensemble Methods
7	Model creation and evaluation, Practical examples and applications
8	Support Vector Machines and Kernel Methods
9	Clustering Techniques and Dimension Reduction

10	Artificial Neural Networks and Deep Learning
11	Natural Language Processing (NLP) and Text Analysis
12	Time Series Analysis and Forecast Models
13	Project Studies and Case Studies
14	Student Project Presentations

Course Resources	"Python Machine Learning" - Sebastian Raschka, Vahid Mirjalili "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" - Aurélien
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	40
	Computer Sciences	60
	Programming Design	0
	Social Sciences	0

Course Outcome	-Understanding the development and change of economic problems in the 20th century - Understanding the political approaches that arise in overcoming the problems encountered - Understanding the effects of political approaches on the solution process of problems -To provide information infrastructure on structural problems of developing economies -To analyze the reflections of the economic crises in the world on other countries
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Aims of the course	It aims to teach students the basic concepts of artificial intelligence, data analysis techniques and real-world applications of these techniques.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
İKT4121	World Economy	Fall / 4	4
Language of Instruction	Turkish		
Type of Course Unit	Selective		
Prerequisites and co-requisites	-		

Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Entry
2	Turkey's growth problem throughout the 20th century
3	Turkey's growth problem throughout the 20th century Employment problem in general
4	The problem of price stability in terms of periods
5	The problem of income distribution
6	Public finance problem before the 1980s
7	Evaluation of the general situation before the January 24, 1980 decisions and the process
8	Midterm
9	General economic situation since January 24, 1980 to the present
10	Public financing deficit and implemented programs
11	Measures taken related to domestic and foreign borrowing
12	The development of capital markets and financing problems of the private sector
13	Relations with the IMF and their reflections on the real and financial sectors of the relations
14	General analysis of the global crisis-Global crisis and national economy

Course Resources	Ayhan Aytaç, Gökhan Sönmezler, Güney Çetin Gürkan, Mehmet Serkan, Nagihan Oktayer, Sadi Uzunoğlu, Sudi Apak, Uğur Civelek, Current Economic Problems: World Economy, Literatür Publishing, 2010.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60

On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-To understand the development and change of economic problems in the 20th century -To understand the political approaches that emerge in overcoming the problems encountered -To understand the effects of political approaches on the solution process of problems -Providing information infrastructure about the structural problems of developing economies -Analyzing the reflections of economic crises in the world on other countries
Aims of the course	Risk management and risk assessment, evaluation of occupational risks, sources of danger and risk assessment methodologies for the protection of employees' health and ensuring their safety.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			X
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			

16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İSG4123	RISK MANAGEMENT AND EVALUATION		Fall / 4		4	
Language of Instruction	Turkish					
Type of Course Unit	Selective					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project	
3	3	0	-	-	-	
Name of Lecturers						
Assistants	-					

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Risk Management Basic Processes
2	Risk Assessment Stages
3	Identification and Rating of Risks
4	Hazard Sources Based on Risk Assessment
5	Hazard Sources Based on Risk Assessment
6	Hazard Sources Based on Risk Assessment
7	Risk Assessment Provisions in Laws and Regulations
8	Risk Assessment Provisions in Laws and Regulations

9	Qualitative Risk Analysis Methods
10	Qualitative Risk Analysis Methods
11	Qualitative Risk Analysis Methods
12	Qualitative Risk Analysis Methods
13	Qualitative Risk Analysis Methods
14	Qualitative Risk Analysis Methods

Course Resources	Occupational Health and Safety Law No. 6331, Risk Assessment Regulation, Lecture Notes
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Evaluation of occupational risks, -Causes and factors affecting work accidents and occupational diseases, -Deciding how to approach risk management activities and how to carry out these activities, -Making qualitative assessments of risks and prioritizing their impact on activity objectives, -Measuring the likelihood and impact of risks, predicting their impact on goals,
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Aims of the course	Risk management and risk assessment, evaluation of occupational risks, sources of danger and risk assessment methodologies for the protection of employees' health and ensuring their safety.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics		Date	
Course Unit Code YMH4125	Course Unit Title Bioinformatics	Semester/Year Fall / 4	Number of ECTS Credits 4
Language of Instruction	Turkish		

Type of Course Unit	Selective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Overview of the field of bioinformatics
2	Practical knowledge on the structure and use of common biological data databases
3	Examination of the structure of DNA and RNA Sequences
4	Sequence Analysis: Comparative genomics, alignment, BLAST algorithm and derivatives
5	Next Generation Sequencing
6	Genome Analysis I: Genome sequencing
7	Genome Analysis II Gene finding, Promotor, Exon and Intron regions recognition
8	Protein Bioinformatics
9	Visa Exam
10	To define and apply basic and advanced concepts in Computational Biology fields
11	Drug design and molecular dynamics simulation
12	Examination of artificial intelligence methods in bioinformatics
13	Bioinformatics applications (submitting articles)
14	Bioinformatics applications (submitting articles)

Course Resources	Course notes, software tools, academic publications
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-

	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	60
	Computer Sciences	40
	Programming Design	0
	Social Sciences	0

Course Outcome	-Ability to follow current literature in the field of bioinformatics, make technical presentations, listen and write articles at academic level. -Ability to use bioinformatics data used in different fields with artificial intelligence techniques, to define and apply basic and advanced concepts in the fields of bioinformatics and computational biology. -Introducing bioinformatics research and applications to students -Students will be provided with basic knowledge and skills that will be useful in their future careers in the field of bioinformatics.
Aims of the course	i) to train the student in Computational Biology, Genome Processing, DNA, RNA, Next Generation Sequencing, Genome Analysis, Databases and Ontologies, Protein Bioinformatics, which are the main sub-branches of bioinformatics, ii) to teach students the application of machine learning and artificial intelligence techniques to the fields of bioinformatics iii) to study the application fields of drug design and molecular discovery
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			

8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
YBS4127	SUPPLY CHAIN METHOD		Fall / 4		4	
Language of Instruction	Turkish					
Type of Course Unit	Selective					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	3	0	-		-	-
Name of Lecturers						
Assistants	-					

Course content	
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Weekly Detailed Course Contents	
Week	Topic

1	Introduction and Basic Concepts
2	Supply Chain Strategy and Design
3	Demand Forecasting and Planning
4	Inventory Management
5	Supply Management
6	Production Planning and Control
7	Logistics and Distribution Management
8	Logistics and distribution networks design
9	Supply Chain Performance Measurement
10	Risk Management and Resilience
11	Information Technology and Supply Chain
12	Global Supply Chain Management
13	Sustainable Supply Chain Management
14	Presentation of student projects

Course Resources	<i>"Supply Chain Management: Strategy, Planning, and Operation" by Sunil Chopra and Peter Meindl</i> <i>"Designing and Managing the Supply Chain" by David Simchi-Levi, Philip Kaminsky, and Edith Simchi-Levi</i> <i>"Logistics Management and Strategy: Competing Through the Supply Chain" by Alan Harrison and Remko van Hoek</i>
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Gain the ability to comprehensively understand and apply all aspects of supply chain management. -Developing the ability to effectively manage supply chain processes. -Gain the ability to produce solutions and think strategically for real-world problems. -Developing teamwork, analytical thinking and problem solving skills.
Aims of the course	It aims to teach students the basic concepts, strategies and practices of supply chain management.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			X
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
MAT4139	Custom Defined Functions		Fall / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Selective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Gamma function and integral.
2	Beta function and integral.
3	Error function and standard normal distribution.
4	Laplace transform.
5	Characteristic function and its applications.
6	Uniform distribution and generalized function.
7	Bernstein polynomial.
8	Growth curves.
9	Orthogonal condition.
10	Orthogonal functions.
11	Fourier expansion.
12	Fourier integral
13	Finding the polynomial that estimates the integrable function within a certain range.
14	Wavelet transform
	Special Functions. Z. X. Wang, D. R. Guo · 1989, ISBN: 9789971506674, 997150667X

course Resou rces			
Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Understanding the concept of generalized function. - Can match the basic components and orthogonal transformation. -Can match the Laplace transform and the moment generating function. -Can match the characteristic function and the Fourier transform.
Aims of the course	To ensure that the methods used in statistical theory are matched with their counterparts used in applied mathematics.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			X
2	Indicates the place and importance of statistics in professional life.			

3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

SEMESTER 8

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST4102	Continuous Parameterized Markov Chains		Spring /4	6	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
4	4	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Binomial process and its approach to the Poisson process. Definition of the Poisson process, including in the differential approach.
2	Definition of stochastic processes with continuous parameter discrete state space.
3	Properties of the Poisson process and the birth-death process with continuous parameters.
4	Ratio matrix.
5	Continuous parameter Markov chain, determination of the rate matrix and the concept of embedded Markov chain.
6	Establishment of the discrete parameter process representing the continuous parameter Markov chain.
7	Introduction to the stochastic queue model: Introduction of the M/M/1 model and calculation of its indicators.
8	Poisson arrival stream.
9	Multichannel Markov queue models.
10	Erlang distribution and queue model.
11	Kolmogorov differential equations.
12	Stochastic processes of second order
13	Stochastic differential.
14	Stochastic integral.

Course Resources	Probability and Random Processes. Geoffrey Grimmett and David Stirzaker, Oxford University Press.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who		

	has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Optimizing a stochastic system. -To make statistical inferences based on a stochastic model.
Aims of the course	To ensure that a stochastic system is defined along with its parameters.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department					Date	
Department of Statistics						
Course Unit Code	Course Unit Title		Semester/Year		Number of ECTS Credits	
İST4104	Graduation Project		Spring / 4		6	
Language of Instruction	Turkish					
Type of Course Unit	Compulsory					
Prerequisites and co-requisites	-					
Address of course	-					
Local Credit	Theoretical	Practical	Laboratory		Presentation	Project
3	0	6	-		-	-
Name of Lecturers						
Assistants	-					

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Statistical Ethics and Basic Concepts
2	Literature Review and Determination of Research Problem
3	Data collection methods and data privacy and protection of personal data
4	Data Preprocessing and Basic Analysis
5	Selection of Statistical Methods
6	Data Visualization Techniques
7	Interim Report Presentation and Feedback
8	Modeling and Interpretation of Results
9	Interpretation and Discussion of Findings
10	Academic Writing Rules and Reporting
11	Project Writing Process and Revisions
12	Project Presentation Techniques
13	Preliminary Presentations and Evaluation
14	Final Report Submission and Presentation

Course Resources	Open access articles and statistical datasets
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	In-Term studies	Quantity	Percentage (%)
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Assessment Methods and Criteria	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.	X		
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.	X		
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			

9	Makes statistical inference (estimation, hypothesis testing, etc.).		X	
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.		X	
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			X
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST4106	Statistical Decision Theory		Spring / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to the Course and Basic Concepts
2	Decision Problems and Decision Theory Approach

3	Probability Theory and Its Role in Decision Making
4	Loss and Risk Based Decision Theory
5	Utility Functions and Optimization
6	Bayesian Decision Theory
7	The role of parameter estimation and hypothesis testing in the decision process
8	Midterm exam or students' development of solution suggestions for a specific decision problem
9	Nonparametric Decision Theory
10	Multi-Criteria Decision Making
11	Group Decision Making and Consensus Methods
12	Statistical Simulation Techniques and Their Use in Decision Making
13	Real-Life Decision Making Applications
14	General Evaluation and Student Presentations

Course Resources	Berger, J. O. (1985). Statistical Decision Theory and Bayesian Analysis. Springer. Pratt, J. W., Raiffa, H., & Schlaifer, R. (1995). Introduction to Statistical Decision Theory. The MIT Press
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Will be able to identify and analyze decision problems under uncertainty and risk. -Will be able to learn and apply the basic principles of statistical decision theory. -Will be able to make optimal decisions using utility and loss functions. -Will be able to understand the role of parametric and nonparametric methods in decision processes. -Will be able to adapt decision theory to real life problems.
Aims of the course	It aims to teach students the use of statistical methods in decision-making processes and to provide them with theoretical and practical skills in solving problems that require decision-making under uncertainty.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			X
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department		Date
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Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST4108	Statistical Methods in Clinical Trials		Spring / 4	3	
Language of Instruction	Turkish				
Type of Course Unit	Selective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Planning and Design of Clinical Trials
3	Descriptive Statistics and Data Visualization
4	Hypothesis Tests and P-values
5	Analysis of Variance (ANOVA)
6	Regression Analysis
7	Survival Analysis
8	Repeated Measures and Mixed Effects Models
9	Meta-Analysis
10	Power Analysis in Clinical Trials
11	Multivariate Statistical Methods
12	Applications with package programs
13	Case Studies
14	Student project presentations

Course Resources	-Clinical Trials: A Methodologic Perspective" by Steven Piantadosi -Fundamentals of Clinical Trials" by Lawrence M. Friedman, Curt D. Furberg, David L. DeMets -Survival Analysis: A Self-Learning Text" by David G. Kleinbaum, Mitchel Klein
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Statistical Methods in Clinical Trials Understanding the Design of Clinical Trials: -Can perform hypothesis tests and interpret p-values in clinical trials. -Can analyze clinical data and apply various statistical models using package programs. -Can analyze real-world clinical data, interpret and report results. -Can make predictions with models used in clinical trials and evaluate the accuracy of these predictions.
Aims of the course	To ensure that students learn the statistical methods used in clinical trials and how to apply these methods with package programs.
The way of processing course	Face to face

Relation of the course with program outcomes					
Learning outcomes			1	2	3
1	Explains the concepts and principles of probability and statistics.				
2	Indicates the place and importance of statistics in professional life.				

3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İST4110	Data Envelopment Analysis		Spring / 4	3	
Language of Instruction	Turkish				
Type of Course Unit	Selective				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to Data Envelopment Analysis, basic concepts
2	CCR (Charnes, Cooper, Rhodes) model.
3	BCC (Banker, Charnes, Cooper) model.
4	The concept of scale returns and efficiency analysis.
5	Multi-input and multi-output DEA models
6	Relationships and effects between inputs and outputs.
7	Cross-efficiency and super-efficiency concepts
8	Data preparation, data cleaning and normalization techniques.
9	Integration of goal programming and DEA
10	Scale models with variable reversals.
11	Relaxed and Constrained DEA Models
12	Inferential Statistics and DEA
13	Benchmarking and comparison analysis using DEA.
14	General repetition and practice

Course Resources	Giri, N. C. (2003). <i>Multivariate statistical analysis</i>
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition.		

	In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	50
	Computer Sciences	50
	Programming Design	0
	Social Sciences	0

Course Outcome	-Data can be entered into the program. - Ability to apply normality assumptions -Abilikte to apply hypothesis tests -Ability to apply variance analysis -Ability to apply regression analysis
Aims of the course	Application of Data Envelopment analysis and use of its programs
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code İST4112	Course Unit Title Discrete Multivariate Data Analysis		Semester/Year 8 / 4	Number of ECTS Credits 3	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
2	2	0	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Discrete multivariate random variables and distributions
2	Some discrete multivariate distributions and their properties
3	Contingency tables
4	Analyses and inference based on contingency tables
5	Analysis and models for binary response variables
6	Log-linear models and analysis
7	Log-linear models and analysis
8	Midterm exam
9	Logit models and analysis
10	Probit models and analysis
11	Logistic regression model and analysis
12	Logistic regression model and analysis
13	Discrete Multivariate Data Analysis package program applications
14	Discrete Multivariate Data Analysis package program applications

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Learns discrete random vectors and the probability distributions of random vectors.			
2	Understands the structure of cross-tabulation and makes inferences.			
3	Recognizes and analyzes models related to binary response variables.			
4	Recognizes and analyzes log-linear, logit, and probit models.			
5	Learns and performs logistic regression analysis.			
6				

7				
8				
9				
10				
11				
12	Having the ability to develop computer programs using mathematical knowledge			
Contribution of the course: 1:No 2:Partially 3:Completely				

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			X
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics			Date
Course Unit Code İST4114	Course Unit Title Simulation Techniques	Semester/Year 8 / 4	Number of ECTS Credits 6

Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	3	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Basic Simulation Concepts
2	Discrete Event Simulation and Modeling Structures
3	Selection of Probability Distributions-I
4	Selection of Probability Distributions-II
5	Hypothesis Tests
6	Random Number Generators and Generating Random Numbers from Distributions
7	Simulation in Some Distributions – 1
8	Simulation in Some Distributions – 2
9	Algorithms and MATLAB
10	Generating Random Numbers and Performing Simulations in Some Distributions Using MATLAB
11	Monte Carlo Experiment and Simulation Method, Parameter Estimation with Simulation
12	Parameter Estimation with Simulation -1
13	Parameter Estimation with Simulation -2
14	Simulation Applications

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-

	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Students can distinguish between classical sampling methods and simulation. 2. Students can generate random numbers from a continuous uniform distribution in the range (0,1) using random number generators. 3. Students can determine how to generate random numbers from any distribution using the inverse transformation method. 4. Students can describe how to estimate model parameters with simulation. 5. Students can estimate the parameters of a large-scale problem using simulation with MATLAB.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			X
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			

10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title	Semester/Year		Number of ECTS Credits	
İST4116	Statistical Information Criteria	8 / 4		6	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	3	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Akaike Information Criterion (AIC)

3	Bayesian Information Criterion (BIC)
4	Other Information Criteria: AICc, DIC, WAIC
5	Evaluating Model Fit
6	Information Criteria and Model Complexity
7	Bayesian Approaches and Information Criteria
8	Multiple Model Comparison
9	Model Selection and Prediction Performance
10	Simulation and Real Data Applications
11	Applications of Information Criteria with Software Packages
12	Limitations and Criticisms of Information Criteria
13	Sample Applications
14	Student Project Presentations

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Understanding the basic concepts of information criteria 2. Evaluating model fit using information criteria. 3. Assessing the impact of information criteria on prediction performance.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			X
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department			Date
Department of Statistics			
Course Unit Code	Course Unit Title	Semester/Year	Number of ECTS Credits
İST4118	HISTORY OF STATISTICS	8 / 4	3

Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	General History of Statistics
2	Statistics in Health, Social, Science, and Engineering Fields
3	Prominent Statisticians in History (Abraham De Moivre, Bernoulli)
4	Prominent Statisticians in History (Carl Friedrich Gauss, Pearson)
5	Prominent Statisticians in History (Bernhard Riemann)
6	Prominent Statisticians in History (Markov)
7	Prominent Statisticians in History (Fisher, Kolmogorov)
8	Prominent Statisticians in History (Anderson)
9	Prominent Statisticians in History (Boris Vladimirovich Gnedenko)
10	Discovery of Normal Distribution
11	Recent Developments
12	The Future of Statistics, Importance in Artificial Intelligence
13	Turkish Statistical World
14	Statistical Society

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-

	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Students will recognize the historical development of the science of statistics and key milestones 2. Students will understand how statistical theories developed and the historical events that contributed to their development. 3. Students will comprehend the relationship between statistics and other scientific disciplines and how these relationships evolved throughout history. 4. Students will gain the ability to critically evaluate historical texts and studies. 5. Students will develop academic research skills on the history of statistics and improve their ability to conduct literature reviews in this field.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			X
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			

12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code YMH4120	Course Unit Title Blockchain Technologies		Semester/Year 8 / 4	Number of ECTS Credits 4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Course rationale, content, plan, method of delivery, and introduction to course resources
2	Introduction to Blockchain, three-dimensional virtual worlds, Metaverse ecosystem, IoT, Society 5.0, Industry 4.0

3	SQL and NoSQL, blockchain databases, distributed file system, decentralized storage
4	Virtual reality applications in Unity, algorithm scenario creation
5	Augmented reality applications in Unity, innovative aspects, IoT applications
6	Mixed reality applications
7	Libraries, hardware and software resources for the Metaverse, virtual economy management
8	Digital twins
9	Blockchain, cold-hot wallet applications, crypto assets and NFTs, digital assets
10	Smart contracts and blockchain design
11	Web 3.0 databases, robotic process management, AutoML, ModelOPS, DataOPS approaches
12	Natural language processing and machine learning approaches for human-machine communication
13	Comparison of different Blockchain platforms and architectures
14	Blockchain future in light of technological developments, advantages and bottlenecks, ethical issues

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

	Mathematics and Basic Sciences	100
	Computer Sciences	0

Percentage of Course Category (%)	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Python programming language for Metaverse and Web 3.0 2. Digital twin applications 3. Blockchain programming 4. Spatial computing in the Metaverse environment 5. Blockchain and smart contracts
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department		Date
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Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
İKT4122	Financial Crises		8 / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction
2	Basic Elements of Financial Crises
3	Causes of Financial Crises
4	Types of Financial Crises
5	Financial System
6	Asymmetric Information
7	Asymmetric Information (Continued)
8	Risk Sharing and Investments
9	Regulation Theory
10	Institutional Forms
11	The 1929 Crisis and Institutional Forms
12	1973-1979 Oil Crisis
13	2007-2008 Financial Crisis
14	Mexican and Asian Crises

Course Resources	• Selçuk, B. and Büyükşalvarcı, A. (2011). <i>History of Financial Crises from 1630 to 2010</i>, Çatı Kitapları. • Krugman, P. (2019). <i>The Return of Depression Economics and the Global Crisis</i>, Literatür Yayınları.
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40

	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Will be able to apply basic financial crisis concepts in decision-making processes. 2. Will be able to explain how economic and political factors affect financial crises. 3. Will be able to explain financial crises using the asymmetric information approach. 4. Will be able to analyze how financial crises impact individual investment behavior. 5. The greatest advantage of the course is learning to invest through risk sharing.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.	X		
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			

6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
iSG4124	Occupational Health And Safety Management Systems		8 / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic

1	Management Systems
2	TS EN ISO 9000 Series Standards
3	ISO 14001 Environmental Management System
4	ISO 14001 Environmental Management Standards
5	ISO 22000 Food Safety Management Systems
6	Implementation, Verification, and Improvement of Food Safety Management Systems
7	Other Management Systems
8	Other Management Systems (Continued)
9	OHS Management System
10	OHS Management System Approach
11	OHS Management Systems
12	TS ISO 45001:2018 Occupational Health and Safety Systems
13	TS ISO 45001:2018 Occupational Health and Safety Systems (Continued)
14	System Executives According to TSE Standards

Course Resources	TSE; TS EN ISO 9000, ISO 14001, ISO 22000, TS ISO 45001:2018, TSE; System Executives According to Standards
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Will learn about the OHS Management System and OHS Management Systems. 2. Will understand the conditions and user manuals of management systems, as well as their aims and outputs. 3. Will understand the responsibilities of the state, employer, and employee in relation to OHS. 4. Will gain the ability to communicate effectively with a sense of professional and ethical responsibility. 5. Students will be made aware of OHS Management Systems
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			X
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code YMH4126	Course Unit Title Cryptology		Semester/Year 8 / 4	Number of ECTS Credits 4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-
Name of Lecturers					
Assistants	-				

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction to course objectives, goals, and learning outcomes; discussion of the selected current topic; analysis of successful project examples from previous semesters; information on course evaluation, presentation of the detailed roadmap
2	Fundamentals of Cryptography
3	Symmetric Encryption
4	Symmetric Encryption (Continued)
5	Asymmetric Encryption
6	Asymmetric Encryption (Continued)
7	Protocols
8	Protocols (Continued)
9	Creating GitHub repositories for developed libraries, preparing user manuals, and creating test documentation
10	Presentation of outputs obtained from the website as part of dissemination activities
11	Application Presentations
12	Application Presentations (Continued)
13	Application Presentations (Continued)
14	Application Presentations (Continued)

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Understand the requirements for randomness. 2. Grasp statistical tests and their usage. 3. Gain the ability to apply cryptographic requirements. 4. Be able to prepare scientific outputs and reports. 5. This course is a challenge. You will have the opportunity to experience how much you trust yourself.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			X
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department				Date	
Department of Statistics					
Course Unit Code	Course Unit Title		Semester/Year	Number of ECTS Credits	
YBS4128	Innovative Product and Service Design		8 / 4	4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project

3	3	0	-	-	-
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Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Introduction and Basic Concepts
2	Design Thinking and Processes
3	User Research and Analysis
4	Idea Generation and Creativity Techniques
5	Prototyping and Testing
6	Product and Service Development Strategies
7	Project Management and Application
8	Using Project Management Tools
9	Marketing and Launch Strategies
10	Financial Planning and Investment
11	Sustainability and Social Responsibility
12	Technology and Innovation
13	Innovation in Global Markets
14	Student Project Presentations

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who		

	has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Learn the basic concepts and theoretical foundations of innovative product and service design. 2. Learn user research methods and use them to identify user needs. 3. Generate innovative ideas using creative thinking techniques. 4. Develop marketing and launch strategies for innovative products and services. 5. Understand and apply concepts of sustainable product and service design.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.			
2	Indicates the place and importance of statistics in professional life.			
3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			X

18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				

Department Department of Statistics				Date	
Course Unit Code MAT4130	Course Unit Title Metric and Normed Structures		Semester/Year 8 / 4	Number of ECTS Credits 4	
Language of Instruction	Turkish				
Type of Course Unit	Compulsory				
Prerequisites and co-requisites	-				
Address of course	-				
Local Credit	Theoretical	Practical	Laboratory	Presentation	Project
3	3	0	-	-	-

Course content	
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Weekly Detailed Course Contents	
Week	Topic
1	Definition and properties of the metric concept.
2	Basic topological concepts.
3	Introduction to topological structures.
4	Convergence in metric spaces. Cauchy sequence.
5	Continuity in metric spaces: sequential continuity.
6	Closure of a set.
7	Complete metric spaces.
8	The concept and properties of norms.
9	The relationship between metric and norm.
10	Metric derived from a norm.
11	L1 and L2 norms.
12	Minimization problem.
13	Clustering problem.
14	Clustering methods.

Course Resources	
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
On Assessment Methods and Criteria	A grade of success; is determined by using the relative evaluation system or the discretion of the instructor. In order to be able to evaluate the courses in which the relative evaluation system and the teaching staff member's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that can not be evaluated with the relative evaluation system, the distribution of the final grade of the final grade and the letter grades which are the equivalents of the success grades are determined by the consent of the instructor who gives the lesson using the table prepared by the Senate with 100 points. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.		

Percentage of Course Category (%)	Mathematics and Basic Sciences	100
	Computer Sciences	0
	Programming Design	0
	Social Sciences	0

Course Outcome	
Aims of the course	1. Understand the relationship between metric and norm concepts. 2. Understand what the metric difference means in statistics. 3. Grasp metric clustering methods. 4. Reduce the minimization problem to norm structures. 5. Establish a connection between the L1 norm and least squares.
The way of processing course	Face to face

Relation of the course with program outcomes				
Learning outcomes		1	2	3
1	Explains the concepts and principles of probability and statistics.	X		
2	Indicates the place and importance of statistics in professional life.			

3	Defines basic economic and legal concepts and principles.			
4	Produces statistical solutions to problems that may be encountered in professional life.			
5	Uses appropriate methods and techniques to obtain and/or organize statistical data.			
6	Establishes and uses software architecture.			
7	Can use techniques to solve problems involving deterministic, random and stochastic events in a statistical sense.			
8	Applies statistical analysis methods.			
9	Makes statistical inference (estimation, hypothesis testing, etc.).			
10	Produces solutions to problems in different disciplines using statistical techniques.			
11	Have the ability to write objective programs.			
12	It solves a created model with the help of package programs.			
13	Be able to interpret the interaction by distinguishing the difference between statistical methods.			
14	Be aware of the interaction of different disciplines with statistics.			X
15	Presents the results obtained using statistical methods verbally and visually.			
16	Have the ability to work effectively and productively both individually and collaboratively.			
17	In addition to their professional development, they constantly improve themselves by determining their educational needs in scientific, cultural, artistic and social fields in line with their interests and abilities.			
18	It has social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to scientific fields where statistics is used.			
Contribution of the course: 1:No 2:Partially 3:Completely				