ESOGÜ FACULTY OF SCIENCE

DEPARTMENT OF STATISTICS

Course – ECTS Credits

Click the course name in the following table to learn goal, learning outcomes, content, assessment, workload and ECTS credits etc. about any of courses.

1st Year					
Semester I					
Code	Course Name	ECTS	T+P+L	C/E	Language
	INTRODUCTION TO ECONOMICS I	3	3+0+0	C	Turkish
	STATISTICS I	5	4+0+0	C	Turkish
	INTRODUCTION TO ANALYSIS I	5	4+0+0	C	Turkish
	INTRODUCTION TO COMPUTER PROGRAMMING	4	2+0+0	C	Turkish
	LINEAR ALGEBRA	4	3+0+0	C	Turkish
	TURKISH LANGUAGE I	2	2+0+0	C	Turkish
	ENGLISH I	2	3+0+0	C	Turkish
	ATATÜRK PRINCIPLES AND REVOLUTION HISTORY I	2	2+0+0	C	Turkish
	Social Elective I	3	2+0+0	E	Turkish
	Total	**30**			
Semester II					
Code	Course Name	ECTS	T+P+L	C/E	Language
	INTRODUCTION TO ECONOMICS II	3	3+0+0	C	Turkish
	STATISTICS II	5	4+0+0	C	Turkish
	INTRODUCTION TO ANALYSIS II	5	4+0+0	C	Turkish
	COMPUTER PROGRAMMING	5	2+2+0	C	Turkish
	GENERAL STATISTICS	3	2+0+0	C	Turkish
	TURKISH LANGUAGE II	2	2+0+0	C	Turkish
	ENGLISH II	2	3+0+0	C	Turkish
	ATATÜRK PRINCIPLES AND REVOLUTION HISTORY II	2	2+0+0	C	Turkish
	Social Elective II	3	2+0+0	E	Turkish
	Total	**30**			
2nd Year					
Semester III					
Code	Course Name	ECTS	T+P+L	C/E	Language
	PROBABILITY I	6	4+0+0	C	Turkish
	SAMPLING I	3	2+0+0	C	Turkish
	PROGRAMMING LANGUAGES I	5	2+2+0	C	Turkish
	SURVEY DESIGN	4	3+0+0	C	Turkish
	NUMERICAL ANALYSIS	4	2+0+0	C	Turkish
	ANALYSIS	5	3+0+0	C	Turkish
	Non-Departmental Elective I	3	3+0+0	E	Turkish
	Total	**30**			
Semester IV					
Code	Course Name	ECTS	T+P+L	C/E	Language
	PROBABILITY II	6	4+0+0	C	Turkish
	SAMPLING II	3	2+0+0	C	Turkish
	PROGRAMMING LANGUAGES II	5	2+2+0	C	Turkish
	TECHNICAL ENGLISH	3	2+0+0	C	Turkish
	TIME SERIES ANALYSIS	5	3+0+0	C	Turkish
	DECISION THEORY	5	3+0+0	C	Turkish
	Non-Departmental Elective II	3	3+0+0	E	Turkish
	Total	**30**			
3rd Year					
Semester V					
Code	Course Name	ECTS	T+P+L	C/E	Language
	MATHEMATICAL STATISTICS I	5	4+0+0	C	Turkish
	OPERATIONAL RESEARCH I	6	4+0+0	C	Turkish
	REGRESSION ANALYSIS	5	3+0+0	C	Turkish
	SCIENTIFIC RESEARCH METHODS	4	3+0+0	C	Turkish
	Departmental Elective I	5	3+0+0	E	Turkish
	Departmental Elective I	5	3+0+0	E	Turkish
	Departmental Elective Courses I	5	3+0+0	E	Turkish
	Parameter Estimation	5	3+0+0	E	Turkish
	Statistical Softwares	5	3+0+0	E	Turkish

	Causality Analysis in Time Series	5	3+0+0	E	Turkish
	Machine Learning	5	3+0+0	E	Turkish
	Advanced Technical English	5	3+0+0	E	Turkish
	Financial Risk Management	5	3+0+0	E	Turkish
	Total	**30**			
	Semester VI				
Code	Course Name	ECTS	T+P+L	C/E	Language
	MATHEMATICAL STATISTICS II	5	4+0+0	C	Turkish
	OPERATIONAL RESEARCH II	6	4+0+0	C	Turkish
	ECONOMETRICS	5	3+0+0	C	Turkish
	QUALITY CONTROL	4	3+0+0	C	Turkish
	Departmental Elective Course II	5	3+0+0	E	Turkish
	Departmental Elective Course II	5	3+0+0	E	Turkish
	Departmental Elective Courses II	5	3+0+0	E	Turkish
	Hypothesis Testing	5	3+0+0	E	Turkish
	Demographic Tecniques	5	3+0+0	E	Turkish
	Stochastic Process	5	3+0+0	E	Turkish
	Data Analysis	5	3+0+0	E	Turkish
	Financial Investment Mangament	5	3+0+0	E	Turkish
	Introduction to Data Science with Python	5	3+0+0	E	Turkish
	Data Analysis with SQL	5	3+0+0	E	Turkish
	Total	**30**			
	4th Year				
	Semester VII				
Code	Course Name	ECTS	T+P+L	C/E	Language
	EXPERIMENTAL DESIGN I	4	3+0+0	C	Turkish
	MULTIVARIATE STATISTICAL TECHNIQUES	5	4+0+0	C	Turkish
	Statistical Applications I	6	2+2+0	E	Turkish
	Departmental Elective III	5	3+0+0	E	Turkish
	Departmental Elective III	5	3+0+0	E	Turkish
	Departmental Elective III	5	3+0+0	E	Turkish
	Statistical Applications I	6		E	
	Statistical Quality Control and Total Quality Management I	6	2+2+0	E	Turkish
	Repeated Measures Experiments I	6	2+2+0	E	Turkish
	Applications of Statistics I	6	2+2+0	E	Turkish
	Statistical Package Programs I	6	2+2+0	E	Turkish
	Methods For Analyzing Statistical Data I	6	2+2+0	E	Turkish
	Financial Market Analysis I	6	2+2+0	E	Turkish
	Multivariate Repeated Measures Designs I	6	2+2+0	E	Turkish
	Reliability Analysis I	6	2+2+0	E	Turkish
	Qualitative Dependent Variable Models I	6	2+2+0	E	Turkish
	Advanced Demographic Techniques I	6	2+2+0	E	Turkish
	Main Economic Indicators I	6	2+2+0	E	Turkish
	Forecating Techniques I	6	2+2+0	E	Turkish
	Statistical Analysis With Softwares I	6	2+2+0	E	Turkish
	Knowledge Discovery I	6	2+2+0	E	Turkish
	Robust Statistical Techniques I	6	2+2+0	E	Turkish
	Markov Chain Applications I	6	2+2+0	E	Turkish
	Departmental Elective Courses III	5	3+0+0	E	Turkish
	Simulation	5	3+0+0	E	Turkish
	Quality Management	5	3+0+0	E	Turkish
	Statistical Techniques for Marketing Research I	5	3+0+0	E	Turkish
	Money and Capital Markets	5	3+0+0	E	Turkish
	Statistical Computing I	5	3+0+0	E	Turkish
	Econometrics II	5	3+0+0	E	Turkish
	Risk Analysis and Insurance	5	3+0+0	E	Turkish
	Statistical Analysis Using MATLAB I	5	3+0+0	E	Turkish
	Statistical Analysis Using R I	5	3+0+0	E	Turkish
	Total	**30**			
	Semester VIII				
Code	Course Name	ECTS	T+P+L	C/E	Language
	EXPERIMENTAL DESIGN II	4	3+0+0	C	Turkish
	NONPARAMETRIC STATISTICAL TECHNIQUES	5	4+0+0	C	Turkish
	Statistical Applications II (1 Course)	6	2+2+0	E	Turkish
	Departmental Elective IV	5	3+0+0	E	Turkish
	Departmental Elective IV	5	3+0+0	E	Turkish
	Departmental Elective IV	5	3+0+0	E	Turkish
	Statistical Applications II				
	Statistical Quality Control and Total Quality Management II	6	2+2+0	E	Turkish
	Repeated Measures Experiments II	6	2+2+0	E	Turkish
	Applications of Statistics II	6	2+2+0	E	Turkish
	Statistical Package Programs II	6	2+2+0	E	Turkish
	Methods For Analyzing Statistical Data II	6	2+2+0	E	Turkish
	Financial Market Analysis II	6	2+2+0	E	Turkish

	Multivariate Repeated Measures Designs II	6	2+2+0	E	Turkish
	Reliability Analysis II	6	2+2+0	E	Turkish
	Qualitative Dependent Variable Models II	6	2+2+0	E	Turkish
	Advanced Demographic Techniques II	6	2+2+0	E	Turkish
	Main Economic Indicators II	6	2+2+0	E	Turkish
	Forecating Techniques II	6	2+2+0	E	Turkish
	Statistical Analysis With Softwares II	6	2+2+0	E	Turkish
	Knowledge Discovery II	6	2+2+0	E	Turkish
	Robust Statistical Techniques II	6	2+2+0	E	Turkish
	Markov Chain Applications II	6	2+2+0	E	Turkish
	Departmental Elective Courses IV	5		E	
	Categorical Data Analysis	5	3+0+0	E	Turkish
	Service systems	5	3+0+0	E	Turkish
	Financial Economics	5	3+0+0	E	Turkish
	Statistical Techniques for Marketing Research II	5	3+0+0	E	Turkish
	Statistical Computing II	5	3+0+0	E	Turkish
	Insurance Statistics and Actuary	5	3+0+0	E	Turkish
	Statistical Analysis Using MATLAB II	5	3+0+0	E	Turkish
	Statistical Analysis Using R II	5	3+0+0	E	Turkish
	Introduction to Data Mining	5	3+0+0	E	Turkish
	Total	**30**			

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO ECONOMICS I	821411XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
1	3	0	3	3

Course Category (Credit)				
Basic Sciences	**Engineering Sciences**	**Design**	**General Education**	**Social**
				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Having knowledge about the science of economics, learning the basic tools used in the analysis of micro-economic events.
Short Course Content	Economic problems and method of economics price theory, the demand-supply and the market balance, flexibility and balance in the applications market, the benefits, the balance of producers and consumers, the production function and law of diminishing returns, cost and revenue analysis, the full balance of the competitive market, firms , imperfectly competitive markets, monopoly and oligopoly, factor markets, labor and wages, and rent of land, capital and interest, enterprise and profit, income distribution, environmental economics

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,7,9,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in economics subjects	1,4,7,9,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of markets.	1,4,7,9,11	1,2,6,10,13	A,K
6				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Kemal YILDIRIM et al. Introduction to Economics, Nisan Bookstore Publicationsi,2017, Eskişehir.
Supporting References	Related documents
Necessary Course Material	

Course Schedule	
1	Free Market Economy, Basic Concepts, Supply and Demand Balance
2	Elasticity of Supply and Demand
3	Consumer Theory and the Balance
4	Theory and Balance of Producer
5	Cost
6	Revenue Analysis
7	Perfect Competition and Short-Run Equilibrium
8	Mid-Term Exam
9	Perfect Competition and Long-Run Equilibrium
10	Monopoly Markets and Short-Long-Run Equilibrium
11	Monopolistic Competition and the Short-Long-Run Equilibrium
12	Oligopoly Markets and Short-Long-Run Equilibrium
13	Factor Markets and Equilibrium
14	Income Distribution and Policy
15	Environmental Economics
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	1	15
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	5	5
Final Exam	1	2	2
Studying for Final Exam	1	5	5
		Total workload	**89**
		Total workload / 30	**2,96**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by				
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICS I	821411XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
1	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	Teaching the basic concepts and techniques of statistics to students
Short Course Content	Basic concepts in statistics, measures of central tendency, measures of variability and Skewness and Kurtosis, Some discrete and continuous probability distributions.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Understand importance of statistics in real life	1-2	1-2-5-6	A
2	Define the basic concepts of statistics	1-2	5-6-8	A
3	Calculate central tendency and variability measures for a dataset	2-5	1-6-11	A
4	Identify the shape of distribution by calculating the measures of skewness and kurtosis	2-5	1-6-11	A
5	Find desired area under normal distribution curve	4-6	1-5-6-11	A
6	Make probability calculations regarding Bernoulli, Poisson, Binomial and Normal distributions	6	1-5-6-11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	**1.** Çömlekçi, N., (2005), Temel İstatistik İlke ve Teknikleri, Bilim Teknik Yayınevi, Eskişehir.
Supporting References	**1.** Akdeniz, F., (2002), Olasılık ve İstatistik, Baki Kitapevi, Adana **2.** Erbaş, S. O., (2007), Olasılık ve İstatistik, Gazi Kitapevi, Ankara **3.** Serper, Ö., (1986), Uygulamalı İstatistik 1, İstanbul. **4.** Serper, Ö., (1986), Uygulamalı İstatistik 2, İstanbul.
Necessary Course Material	Calculator capable of performing statistical calculations

Course Schedule	
1	Definition and functions of statistics
2	Basic concepts in statistics: unit, population and variable
3	Definition and types of variables, measuring variables
4	Collecting of data and kinds of collecting; Nominal scales: Proportions, Ratios and percentages
5	Frequency distributions, classification of frequency distributions according to number of variables; Graphic presentations of frequency distributions
6	Measures of central tendency: Arithmetic mean, weighted average
7	Measures of central tendency: Geometric mean, harmonic mean and quadratic mean
8	Mid-Term Exam
9	Measures of central tendency: Median; Deciles, Quartiles and Percentiles; Mode
10	Measures of variability: The standard deviation, the coefficient of variability
11	Measures of Skewness and Kurtosis
12	Some discrete probability distributions: Bernoulli distribution and binomial distribution
13	Poisson distribution; Some continuous probability distribution: Normal distribution
14	Standard normal distribution and finding desired area under normal distribution curve
15	Normal approach to binomial and poisson distributions
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	4	56
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	6	4	24
Final Exam	1	1	1
Studying for Final Exam	6	4	24
		Total workload	**162**
		Total workload / 30	**5.4**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	--
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof.Dr.Hatice Şamkar			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO ANALYSIS I	821411003

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
1	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Understanding of functions and derivate concepts.
Short Course Content	Numbers, Concept of function, linear function and equations for lines, algebrical functions, exponential, logarithmic and trigonometric functions, sequences and series, limit in functions, continuity and derivate, applications of derivate, curve plotting, parametric equations of curves, polar coordinates, power series, hyperbolic functions.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in analysis subjects	1,4,6,7,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of function and differentation.	1,4,6,7,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Analiz-I Prof Dr.Mustafa Balcı
Supporting References	Related documents
Necessary Course Material	Calculater

Course Schedule	
1	Numbers and Concept of function,
2	Linear function and equations for lines
3	Algebrical functions,
4	Exponential and logarithmic functions
5	Trigonometric functions,
6	Sequences and series
7	Limit in functions
8	Mid-Term Exam
9	Limit in functions
10	Continuity and derivate
11	Continuity and derivate
12	Applications of derivate
13	Applications of derivate
14	Curve plotting and parametric equations of curves, Polar coordinates
15	Power series, Hhyperbolic functions
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**136**
		Total workload / 30	**4,5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Hülya ŞEN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO COMPUTER PROGRAMMING	821411005

Semester	Number of Course Hours per Week		Credit	ECTS	
	Theory	Practice			
1	2	0	2	4	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Information systems and introduction computers; data presentation; basic parts of a computer: Cpu, peripherals, memory; microcomputers and operating systems: Console, Windows; computer programs; impacts of computers on society; computer security
Short Course Content	learning based on information technologies

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3,5	5,6,10	A,G
2	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3,5	1,5,6,12	A,B,D
3	The ability to use suitable algorithms in order to solve the problem of interest	3,5	5,6,10	A,B,D
4	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3,5	6,7	B,D
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	http://aliatalay.net/giris.htm	
Supporting References	Excel 2007 , Zeydin Pala Hasan Ç. (Bal. 2010), Bilgisayar ve İnternet İleri Düzey Excel, Ömer Bağcı	
Necessary Course Material	Computer, internet, projeksiyon	

Course Schedule	
1	The introduction and the basic features of the Windows operating system
2	Desktop, file folder structures, introduction of system files
3	Windows and the programs and the implementation of administrative practices
4	Compression of files, opening, installation of the package of programs, the removal
5	Excel program and the introduction of the basic features of
6	Excel program and the introduction of the basic features of
7	Cell, address, page, workbook concepts, formula usage
8	Mid-Term Exam
9	Cell, address, page, book, concepts of operation, the use of the formula
10	Cell, address, page, book, concepts of operation, the use of the Formula(cont.)
11	Working with objects (list boxes, check boxes, option buttons, etc.).
12	Working with Objects (Button, the spinner, etc.).
13	Use of an Excel formula
14	Application made to the profession (the preparation of the survey lists, etc.)
15	Data protection, encryption, export, taking into
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	3	2	6
Homework	1	30	30
Quiz Exam	2	10	20
Studying for Quiz Exam	1	2	2
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	2	2
Final Exam	1	10	10
Studying for Final Exam			
		Total workload	**120**
		Total workload / 30	**4**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	10
Quiz	30
Bir öğe seçin.	
Mid-term	30
Final Exam	100
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Lecture Ali ATALAY			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
LINEAR ALGEBRA	821411XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
1	3	0	3	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to give basic concepts and properties of linear algebra.
Short Course Content	R^n vector space, vector space, linear independence, base of a vector space, operations with matrices, determinant of a square matrix, minor, rank of a matrix, cofactor and additional matrix, inverse matrix of a square matrix, rank of a matrix, linear equation systems, linear transformations, relationship between linear transformations and matrices, eigenvalues and eigenvectors.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,7,9,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in matrix subjects	1,4,7,9,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of vector space.	1,4,7,9,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Taşcı, D. Lineer Cebir, Gazi kitabevi, 2005.
Supporting References	Sabuncuoğlu, A. Lineer Cebir, Nobel Akademik Yayıncılık, 2014. Akın, Ö. Uygulamalı Lineer Cebir, Palme Yayınları, 2011.
Necessary Course Material	

Course Schedule	
1	R^n vector space, vector space
2	Subvector space
3	linear independence
4	The base and size of vector space's
5	Basic concepts about matrices
6	Equality of matrices, sum of matrices, multiplying matrices by scalars, matrix multiplication
7	Hadamard product and Kronecker product, transpose of a matrix
8	Mid-Term Exam
9	Special matrices
10	Inverse of matrices
11	Elemantary row/column operations and elementary matrices
12	Determinants
13	Eigenvalues and eigenvectors
14	Linear transformations and relationship between linear transformations and matrices
15	Applications
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	1	15
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	0
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**121**
		Total workload / 30	**4,03**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by				
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO ECONOMICS II	821412XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	3	0	3	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Having knowledge about the science of economics, learning the basic tools used in the analysis of micro-economic events.
Short Course Content	Introduction to Macroeconomics, Basic Concepts, National Income Analysis, National Income Measurement Methods, National Income Types, Factors of National Income, Consumption-Savings-Investment Function, National Income Equilibrium and Corruption, Factor Analysis, National Income and Prices General Level Relationship, short-Long-Term Stability, Monetary Theory and Policy, Money Market Balance, Balance Corruption, Quantity Theory, Closed economy Equilibrium (IS-LM model), Inflation and Unemployment Analysis, Business Cycle Fluctuations, International Trade Theory and Policy, Balance of Balance of Payments, Foreign Exchange Market and Balance of the International Monetary System, an Open Economy Macro-Economic Stability (IS-LM-BP Model).Economic problems and method of economics price theory, the demand-supply and the market balance, flexibility and balance in the applications market, the benefits, the balance of producers and consumers, the production function and law of diminishing returns, cost and revenue analysis, the full balance of the competitive market, firms , imperfectly competitive markets, monopoly and oligopoly, factor markets, labor and wages, and rent of land, capital and interest, enterprise and profit, income distribution, environmental economics

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,7,9,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in economics subjects	1,4,7,9,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of markets.	1,4,7,9,11	1,2,6,10,13	A,K

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Kemal YILDIRIM et al. Introduction to Economics, Nisan Bookstore Publicationsi,2017, Eskişehir.
Supporting References	Related documents
Necessary Course Material	

Course Schedule	
1	Introduction to Macroeconomics, Basic Concepts
2	Methods for the Calculation of National Income, National Income Types, Factors of National Revenue
3	Consumption-Savings-Investment Function
4	National Income Equilibrium and Corruption, Factor Analysis,
5	Relation of the General Level of National Income and Prices,
6	General Level of National Income and Prices Short-Long-Term Stability
7	Monetary Theory and Policy
8	Mid-Term Exam
9	Money Market Balance
10	Closed economy equilibrium (IS-LM model)
11	Inflation and Unemployment Analysis, Business Cycle Fluctuations
12	International Trade Theory and Policy,
13	Balance of Balance of Payments, Foreign Exchange Markets and Balance
14	International Monetary Systems
15	Open Economy Macro-Economic Stability (IS-LM-BP Model)
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	1	15
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	5	5
Final Exam	1	2	2
Studying for Final Exam	1	5	5
		Total workload	**89**
		Total workload / 30	**2,96**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by				
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICS II	821412XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	The course provides an introduction to statistical estimation and inference methods
Short Course Content	Sampling theory; Sampling distributions; Statistical estimation theory; Hypothesis testing

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Understands the subject of sampling distributions	1	1-5-6	A
2	Learn the concepts of point estimation and interval estimation.	1	1	A
3	Calculate confidence intervals for various parameters	2-4-5-6	1-5-6-11	A
4	Tests hypotheses regarding various parameters	2-4-5-6-7-11	1-5-6-11	A
5	Understand fundamental theory and methods of statistical inference, with application from real life.	2-4-5-6-7-11	1-5-6-11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Akdeniz, F., (2002), Olasılık ve İstatistik, Baki Kitapevi, Adana
Supporting References	**1.** Çömlekçi, N., (2005), Temel İstatistik İlke ve Teknikleri, Bilim Teknik Yayınevi, Eskişehir **2.** Serper, Ö., (1986), Uygulamalı İstatistik 1, İstanbul. **3.** Serper, Ö., (1986), Uygulamalı İstatistik 2, İstanbul **4.** Erbaş, S. O., (2007), Olasılık ve İstatistik, Gazi Kitapevi, Ankara Aytaç M. (2004), Matematiksel İstatistik, Ezgi Kitapevi, Bursa
Necessary Course Material	Calculator capable of performing statistical calculations

Course Schedule	
1	Samping theory; Probabilistic sampling; Basic concepts about probabilistic sampling and Techniques of probabilistic sampling
2	The estimation errors and source of estimation errors; Sampling distributions
3	Sampling distributions related to the normal distribution;, Central Limit Theorem
4	Estimation; Point Estimator and some properties of point estimators
5	Confidence interval; Large-sample confidence interval for a population mean; Small-sample confidence interval for a population mean
6	Confidence interval for the difference between two population means: Large independent samples; Confidence interval for the difference between two population means: Small independent samples
7	Confidence interval for the difference between two population means: Paired difference samples
8	Mid-Term Exam
9	Confidence intervals for a population proportion; Confidence interval for the difference between two population proportions
10	Confidence intervals for a population variance; Confidence intervals for the ratio of two population variances
11	Hypothesis Testing; Large sample tests for a population mean; Small sample tests for a population mean
12	Hypothesis tests for the difference between two population means: Large independent samples; Hypothesis tests for the difference between two population means: Small independent samples
13	Hypothesis tests for the difference between two population means: Paired difference samples
14	Hypothesis tests for a population proportion; Hypothesis tests for the difference between two population proportions
15	Hypothesis test for a population variance; Hypothesis test for the ratio of two population variances
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	4	56
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	6	4	24
Final Exam	1	1	1
Studying for Final Exam	6	4	24
		Total workload	**162**
		Total workload / 30	**5.4**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3

LECTUTER(S)				
Prepared by	Prof.Dr.Hatice Şamkar			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO ANALYSIS II	821412003

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Understanding of definite and indefinite integrals
Short Course Content	Definite integral, Mean Value Theorems, indefinite integral and fundamental integral formulas, techniques of integration, applications of definite integral, calculation of surface area, calculation of volume, lengths of plane curves, areas of surfaces of revolution, center of mass, improper integrals and Gamma function, numerical integration, the trapezoidal rule, Simpson's rule.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in analysis subjects	1,4,6,7,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of function and integral.	1,4,6,7,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Analiz-II Prof Dr.Mustafa Balcı
Supporting References	Related documents
Necessary Course Material	Calculater

Course Schedule	
1	Definite integral
2	Definite integral
3	Mean Value Theorems
4	Indefinite integral and fundamental integral formulas
5	Techniques of integration
6	Applications of definite integral
7	Calculation of surface area
8	Mid-Term Exam
9	Calculation of volume
10	Lengths of plane curves
11	Areas of surfaces of revolution
12	Center of mass
13	Improper integrals
14	Gamma function, Numerical integration
15	The trapezoidal rule, Simpson's rule
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**136**
		Total workload / 30	**4,5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Hülya ŞEN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
COMPUTER PROGRAMMING	821412004

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	2	2	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	none
Objectives of the Course	An overview of visual programming, data types in Visual Basic programming language, Visual Basic programming environment, parts of Visual Basic programming environment, form design, toolbox, properties window, project window, introduction to Visual Basic programming, constants, variables, data types, input and output statements, control statements, looping statements, arrays, some string processing functions, private type sub programs, function and sub subprograms, usage of modules, local and global variables, sequential and random access files and applications.
Short Course Content	The main objective of the course, visual programming, algorithms and structures, examples of algorithma presentation and visual programming and problem-solving

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3,5	5,6,10	A,G
2	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3,5	1,5,6,12	A,B,D
3	The ability to use suitable algorithms in order to solve the problem of interest	3,5	5,6,10	A,B,D
4	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3,5	6,7	B,D
5				
6				
7				
8				

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Aliatalay.net /programlama.htm (Python ile programlama) https://www.teknolojikogretmenler.com/bir-senelik-python-ders-notlari/
Supporting References	https://erkanduran.wordpress.com/2021/11/19/python-ders-notlari-ve-uygulama-ornekleri/ PYTHON TABANLI ALGORİTMA, PYHON ile ALGORİTMA VE PROGRAMLAMA
Necessary Course Material	Computer,intranet,datashow

Course Schedule	
1	Python program introduction
2	Introduction of variables and constants
3	Information input and output commands, algorithm logic
4	Loops, counter logic, algorithm examples
5	Comparison commands and examples
6	Comparison commands and examples
7	Object applications on the form
8	Mid-Term Exam
9	modules in python
10	functions in python
11	Arrays and their uses in Python
12	arrays
13	More Excel applications in Python
14	More Excel applications in Python
15	More Excel applications in Python
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	4	3	12
Homework	1	30	30
Quiz Exam	1	20	20
Studying for Quiz Exam	1	10	10
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	10	10
Studying for Final Exam			
		Toplam iş yükü	**152**
		Toplam iş yükü / 30	**5,06**
		Dersin AKTS Kredisi	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	10
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	30
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Lecture Ali ATALAY			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
GENERAL STATISTICS	821412006

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
2	2	0	2	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to provide students with basic training in critical thinking via statistical concepts and a statistician's way of understanding the world
Short Course Content	Introduction to statistics: Statistics in daily life, role of statistics. Describing, exploring and comparing data: Data sources, data patterns and data summary measures. Probability: Basic probability concepts, random variable and probability distributions. Sampling technique

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,9,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in economics subjects	1,4,6,7,9,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,9,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,9,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of markets.	1,4,6,7,9,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Maden, S., Korkmaz, M. "Temel Bilimler için İstatistik", Seçkin Yayıncılık, 2018.
Supporting References	Related documents
Necessary Course Material	Computer

Course Schedule	
1	Definition of statistics
2	Basic concepts of statistics
3	Types of statistics
4	Sources of data
5	Methods of data collection
6	Methods of data collection
7	Summarization of qualitative and quantitative dataSampling
8	Mid-Term Exam
9	Summarization of qualitative and quantitative data
10	Summarization of qualitative and quantitative data
11	Measures of central tendency
12	Measures of distribution
13	Data input with SPSS
14	Data Analysis with SPSS
15	Interpretation data output with SPSS
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	1	15
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	5	5
Final Exam	1	2	2
Studying for Final Exam	1	5	5
		Total workload	**89**
		Total workload / 30	**2,96**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Barış ERGÜL			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PROBABILITY I	821413001

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	4	0	4	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	To understand and apply the basic concepts in Probability Theory.
Short Course Content	In this course, basic concepts related to probability, conditional probability, independent events, Bayes' rule, the concept of random variables, the distinction between discrete and continuous random variables, probability functions, cumulative distribution function and moment generating function are discussed in detail.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Be able to define different approaches to the definition of probability.	1,5,6,11	1,5,6,11,12	A
2	Be able to express the probability of an event and probability axioms.	1,5,6,11	1,5,6,11,12	A
3	The concept of random variables: be able to define the concept of discrete and continuous random variables.	1,5,6,11	1,5,6,11,12	A
4	Distribution of random variables: be able to express the distribution of discrete and continuous random variables.	1,5,6,11	1,5,6,11,12	A

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Matematiksel İstatistiğe Giriş, Prof. Dr. Yılmaz Akdi, Gazi Kitabevi.
Supporting References	Olasılık ve Matematiksel İstatistik, Prof. Dr. Ceyhan İnal Süleyman Günay, Hacettepe Üniversitesi Yayınları. Matematiksel İstatistik: Problemler ve Çözümleri, Prof. Dr. İsmail Erdem, Seçkin Yayınları.
Necessary Course Material	

Course Schedule	
1	Introduction to Probability
2	Random experiment, sample points, sample spaces and events
3	conditional probability
4	Independent events
5	Bayes theorem
6	General repetition and applications of the covered topics
7	General repetition and applications of the covered topics
8	Mid-Term Exam
9	Random variable, continuous and discrete random variable
10	Distributions of discrete and continuous random variables
11	Expected value and variance of random variables
12	Moments of random variables
13	Coefficient of skewness and kurtosis of a distribution
14	Chebyshev inequality, application of this inequality
15	Moment Generating Functions
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	50	50
		Total workload	**168**
		Total workload / 30	**5.6**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	1
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in the statistical decision-making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand them in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities and analyse them	1
10	The ability to use statistical methods for the knowledge of quality processes and management	1
11	The ability to use statistical methods to develop his profession and apply statistical techniques	3

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Y. Murat BULUT			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
SAMPLING I	821413XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	2	0	2	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
√				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	-
Objectives of the Course	General concepts related to sampling.
Short Course Content	Advantages of sampling and sampling technique, usage areas of sampling, basic stages of sampling, probability sampling and alternative techniques for probability sampling, bias and its effects, simple random sampling, predictive properties, variance estimation of the mean, estimation of standard error, ratio estimation, determination of sample size, proportional prediction, regression forecast.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Will be able to define the basic concepts of sampling.	1, 7, 8, 9	1, 2, 5	A, D, K
2	Will be able to apply the Simple Random Sampling (RSS) method.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K
3	It formulates and calculates estimates of the population mean, the total, the ratio of two variables to each other, and the ratio and number of units with certain characteristics.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K
4	Determines and interprets confidence intervals with the help of variance estimates of estimates.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K
5	Determines the appropriate sample size for the BBL method.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Çıngı, H. (2009) Örnekleme Kuramı. Ankara:H.Ü. Fen Fakültesi Basımevi.
Supporting References	Yamane, T. (2001) Temel Örnekleme Yöntemleri. Literatür Yayınları:53. (Çeviri) Özdemir, Y. A., Tekin, S. T., Esin, A. (2015) Örnekleme Yöntemlerine Giriş. Seçkin. Orhunbilge, Nevran (2000) Örnekleme Yöntemleri ve Hipotez Testleri, Avcıol Basımevi. Sümbüllüoğlu, V. ve Sümbüllüoğlu K. (2005) Klinik ve Saha Araştırmalarında Örnekleme Yöntemleri ve Örneklem Büyüklüğü
Necessary Course Material	-

Course Schedule	
1	Basic concepts and definitions of sampling
2	Basic stages of sampling
3	Sampling methods: Probability and Non-probability Sampling Methods
4	Errors Occurring in Sampling
5	Simple Random Sampling (Definition and Notations)
6	Simple Estimate
7	Predictor Features
8	Mid-Term Exam
9	Bias and its effects
10	Population mean (μ) and proportion (π) estimation
11	Population total (X) and estimation of the ratio of two variables to each other (R)
12	Determination of Sample Size
13	Determination of Sample Size (Continued)
14	Proportional Prediction
15	Linear Regression Estimation
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	2	1	2
Classroom Studying Time (review, reinforcing, prestudy,….)	10	3	30
Homework	3	2	6
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
		Total workload	**92**
		Total workload / 30	**3.067**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	It provides students with the ability to use theoretical and applied knowledge in the field of statistics.	4
2	It provides the ability to define problems, collect data, model and analyze them with appropriate statistical techniques.	3
3	It provides the ability to analyze and interpret data with up-to-date computer software and use it in statistical decision processes.	1
4	It provides students with the ability to use algorithms to solve the problem.	1
5	It provides students with the ability to conduct research individually and as a team member in applications in statistics and other fields.	3
6	It provides the ability to use basic concepts and principles in the fields of Probability, Statistics and Mathematics.	4
7	It provides awareness of professional ethics.	3
8	It provides the ability/motivation to understand and use English concepts.	1
9	It provides students with the ability to interpret and analyze basic concepts related to social sciences and humanities.	1
10	Having knowledge about quality management and processes and the ability to apply statistical methods in quality improvement.	2
11	It provides students with the ability to use appropriate statistical methods to develop better quality processes in their professional life.	2
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Barış ERGÜL	Araş. Gör. Dr. Zeynep İLHAN		
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PROGRAMMING LANGUAGES I	821413003

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	2	2	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The main aim of the course is to introduce basic information about Excel forms, modül, macro :Form design ,toolbox equipments, properties window, project window, add/ins, standard function, statistical applications and using data
Short Course Content	Excel and Access programs, function modules, and development

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3,5	5,6,10	A,G
2	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3,5	1,5,6,12	A,B,D
3	The ability to use suitable algorithms in order to solve the problem of interest	3,5	5,6,10	A,B,D
4	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3,5	6,7	B,D
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	http://aliatalay.net/excel.htm
Supporting References	Excel 2007 , Zeydin Pala Hasan Ç. (Bal. 2010), Bilgisayar ve İnternet İleri Düzey Excel, Ömer Bağcı
Necessary Course Material	Computer, internet, projeksiyon

Course Schedule	
1	The introduction and the basic features of the Windows operating system
2	Desktop, file folder structures, introduction of system files
3	Windows and the programs and the implementation of administrative practices
4	Compression of files, opening, installation of the package of programs, the removal
5	Excel program and the introduction of the basic features of
6	Excel program and the introduction of the basic features of
7	Cell, address, page, workbook concepts, formula usage
8	Mid-Term Exam
9	Cell, address, page, book, concepts of operation, the use of the formula
10	Cell, address, page, book, concepts of operation, the use of the Formula(cont.)
11	Working with objects (list boxes, check boxes, option buttons, etc.).
12	Working with Objects (Button, the spinner, etc.).
13	Use of an Excel formula
14	Application made to the profession (the preparation of the survey lists, etc.)
15	Data protection, encryption, export, taking into
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	3	3	9
Homework	1	30	30
Quiz Exam	2	10	20
Studying for Quiz Exam	1	2	2
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	2	2
Final Exam	1	10	10
Studying for Final Exam			
		Total workload	**151**
		Total workload / 30	**5,03**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	10
Quiz	30
Bir öğe seçin.	
Mid-term	30
Final Exam	100
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Lecture Ali ATALAY			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
SURVEY DESIGN	821413XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
Fall	3	0	3	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	In this course, students will learn questionnaire design and format, sample selection and design, interview techniques, data coding and entry, and basic data analysis.
Short Course Content	Designing and implementing a survey and analyzing survey data.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Gains the ability to define problems, data collection, modelling and analysis with appropriate statistical techniques.	2,3,9,11	1,5,6,7,12	A,F,G
2	Gains the ability to analyse and interpret data with current computer software and to use them in statistical decision-making processes.	2,3,9,11	1,5,6,7,12,15	A,F,G
3	Gains the ability to conduct research individually and as a team member in applications in statistics and other fields.	2,3,9,11	1,5,6,7,12,15	A,F,G
4	Gains the ability to use algorithms for problem solving.	2,3,9,11	1,5,6,7,12,15	A,F,G
5	Gains the ability to use theoretical and practical knowledge in the field of statistics.	2,3,9,11	1,5,6,7,12,15	A,F,G
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	1. Instructor's lecture note book, 2 Türker Baş, "Survey", Seçkin Publishing, Ankara
Supporting References	1 Alison Galloway, Survey Design and Analysis, www.tardis.ed.ac.uk/~kate/qmcweb/qcont.htm 2.Survey Design, Survey Design Tips, www.surveysystem.com/ssformu.htm 3.Questionnaire Design Guide, www.leeds.ac.uk/iss/documentation/top/top2/top2-9.html 4. Survey Design, www.cc.gatech.edu/classes/cs675-97-winter/Topics/quest-design
Necessary Course Material	Computer

Course Schedule	
1	Science, research, classification of research according to various criteria
2	Planning a research
3	Data collection techniques in research
4	Planning the questionnaire questionnaire
5	Classification of survey questions
6	The design of the questions, the reasons for mistakes in the wording of the questions (Midterm exam)
7	Physical appearance of the question paper
8	Midterm Exams
9	Conducting a pilot study
10	Design of random sample in field research, calculation of sample size
11	Field organisation and supervision
12	Coding of data, preparation of code key
13	Entering and evaluating the data into the computer
14	Analysing survey data, univariate analyses
15	Relational analysis of survey data
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	2	2	4
Homework	1	10	10
Quiz Exam			
Studying for Quiz Exam	1	1	1
Oral exam	1	2	2
Studying for Oral Exam	1	10	10
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)	2	10	20
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	1	1
Final Exam	1	10	10
Studying for Final Exam	14	3	42
		Total workload	**120**
		Total workload / 30	**4**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	5
12		

LECTUTER(S)				
Prepared by	Prof.Dr.Veysel YILMAZ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
NUMERICAL ANALYSIS	821413005

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	2	0	2	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develop skills in applying those concepts and techniques to the solution of problems
Short Course Content	Mathematical Preliminaries and Error Analysis, Solutions of Equations in One Variable, Interpolation and Polynomial Approximation, Numerical Differentiation and Integration, Direct and Iterative Methods for Solutions of Linear Systems, Least-Squares Method.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,7,9,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in iteration subjects	1,4,7,9,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of interpolation.	1,4,7,9,11	1,2,6,10,13	A,K
6				
7				
8				

*__Teaching Methods__ **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

__Measuring Methods__ **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Burden and Faires, Numerical Analysis.
Supporting References	Related documents
Necessary Course Material	

Course Schedule	
1	Mathematical Preliminaries and Error Analysis
2	Bisection method, regula falsi method
3	Newton metod, secand method
4	Lagrange interpolation
5	Divided diferences
6	Problem solving
7	Problem solving
8	Mid-Term Exam
9	Problem solving
10	Rectangular, trapezoidal ve Simpson's mehtods
11	Combined numerical integration methods
12	Cramer ve Gauss elimination method
13	Jacobi ve Gauss Seidel method
14	Least-Squares Method
15	Problem solving
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	1	15
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	0
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**121**
		Total workload / 30	**4,03**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by				
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ANALYSIS	821413006

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to introduce the concepts and techniques involved in the basic topics listed in this lecture and to develope skills in applying those concepts and techniques to the solution of problems
Short Course Content	Vector valued functions, functions of multivariate, domain of functions, limits and continuity, partial derivatives, chain rule, directional derivatives and gradient vector, maxima and minima of functions of several variables, conditional maxima and minima, Langrange multipliers, double integrals

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,7,9,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in functions of multivariate	1,4,7,9,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,7,9,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of double integrals.	1,4,7,9,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Koçak, M. Genel Matematik 2, Nisan Kitabevi, 2016.
Supporting References	Related documents
Necessary Course Material	

Course Schedule	
1	Algebraic operations on vector valued functions
2	Limit and continuity of vector-valued functions
3	Derivative and integral of vector valued functions
4	The arc length of a curve, tangent of a curve, unit tangent-normal-binormal vectors and curvature
5	Domain of functions of several variables
6	Limits and continuity of functions of several variables
7	Partial derivatives
8	Mid-Term Exam
9	Chain rule
10	Directional derivatives and gradient vector
11	Maxima and minima of functions of several variables
12	Conditional maxima and minima and Langrange multipliers
13	Double integrals
14	Double integrals and applications
15	Applications
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	0
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	24	24
Final Exam	1	2	2
Studying for Final Exam	1	24	24
		Total workload	**142**
		Total workload / 30	**4,73**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by				
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PROBABILITY II	821414001

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	4	0	4	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	To learn basic discrete and continuous distributions frequently used in the field of Probability and Statistics.
Short Course Content	Frequently used discrete and continuous distributions, their expected values, variances, derivation of moment generating functions and their various properties are examined in detail. Then, multivariate distributions, their properties, distribution of components, variable transformation techniques in multivariate distributions, and sampling distributions are discussed.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Discrete Distributions: Recognizes Binomial distribution, Hypergeometric distribution and Poisson distribution. The moments of the discrete distribution apply moment-generating functions.	1,5,6,11	1,5,6,11,12	A
2	Continuous Distributions: Recognizes normal, uniform, exponential, gamma and beta distributions. The moments of a continuous distribution apply moment subtracting functions.	1,5,6,11	1,5,6,11,12	A
3	Distinguishes continuous and discrete distributions and solves problems related to them.	1,5,6,11	1,5,6,11,12	A
4	It can evaluate the suitability of a data set for discrete or continuous distribution.	1,5,6,11	1,5,6,11,12	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Matematiksel İstatistiğe Giriş, Prof. Dr. Yılmaz Akdi, Gazi Kitabevi.
Supporting References	Olasılık ve Matematiksel İstatistik, Prof. Dr. Ceyhan İnal Süleyman Günay, Hacettepe Üniversitesi Yayınları. Matematiksel İstatistik: Problemler ve Çözümleri, Prof. Dr. İsmail Erdem, Seçkin Yayınları.
Necessary Course Material	

Course Schedule	
1	Random variable, continuous and discrete random variable, two-dimensional random variable
2	Examination of distribution and probability functions of discrete and continuous random variables
3	Discrete Distributions: Binomial distribution, expected value, variance, moment generating function, moments and skewness
4	Discrete Distributions: Hypergeometric distribution, expected value, variance, moments and skewness
5	Discrete Distributions: Poisson distribution, expected value, variance, moments and skewness
6	Application to discrete distributions
7	Application to discrete distributions
8	Mid-Term Exam
9	Continuous Distributions: Uniform distribution, expected value, variance, moments and skewness
10	Continuous Distributions: Normal distribution, expected value, variance, moments and skewness
11	Continuous Distributions: Exponential distribution, expected value, variance, moments and skewness
12	Continuous Distributions: Gamma distribution, expected value, variance, moments and skewness
13	Continuous Distributions: Beta distribution, expected value, variance, moments and skewness
14	Relationships between continuous and discrete distributions
15	Examining sampling distributions
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	50	50
		Total workload	**168**
		Total workload / 30	**5.6**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	1
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in the statistical decision-making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand them in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities and analyse them	1
10	The ability to use statistical methods for the knowledge of quality processes and management	1
11	The ability to use statistical methods to develop his profession and apply statistical techniques	3

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Y. Murat BULUT			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
SAMPLING II	821414XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	2	0	2	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
√				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	-
Objectives of the Course	To introduce the concepts of sampling techniques.
Short Course Content	Stratified random sampling, Proportional stratified sampling, Optimal stratified sampling, Neyman allocation, Systematic sampling, Cluster sampling

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Will be able to define the basic concepts of sampling.	1, 7, 8, 9	1, 2, 5	A, D, K
2	Will be able to apply the Stratified Random Sampling (SRS) method.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K
3	It formulates and calculates estimates of the population mean, the total, the ratio of two variables to each other, and the ratio and number of units with certain characteristics.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K
4	Determines and interprets confidence intervals with the help of variance estimates of estimates.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K
5	Determines the appropriate sample size for the SRS method.	1, 2, 1, 4, 5, 6, 9, 10, 11	1, 2, 5	A, D, K

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Çıngı, H. (2009) Örnekleme Kuramı. Ankara:H.Ü. Fen Fakültesi Basımevi.
Supporting References	Yamane, T. (2001) Temel Örnekleme Yöntemleri. Literatür Yayınları:53. (Çeviri) Özdemir, Y. A., Tekin, S. T., Esin, A. (2015) Örnekleme Yöntemlerine Giriş. Seçkin. Orhunbilge, Nevran (2000) Örnekleme Yöntemleri ve Hipotez Testleri, Avcıol Basımevi.
Necessary Course Material	-

Course Schedule	
1	Stratified simple random sampling
2	Stratified simple random sampling (continue)
3	Proportional stratified sampling (for mean)
4	Proportional stratified sampling (for ratio)
5	Optimal stratified sampling (for mean)
6	Optimal stratified sampling (for ratio)
7	Neyman allocation (for mean)
8	Mid-Term Exam
9	Neyman allocation (for ratio)
10	Sample size for stratified random sampling
11	Sample size for stratified random sampling (continue)
12	Systematic sampling
13	Systematic sampling (continue)
14	Cluster sampling (for mean)
15	Cluster sampling (for ratio)
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	2	1	2
Classroom Studying Time (review, reinforcing, prestudy,….)	10	3	30
Homework	3	2	6
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
		Total workload	**92**
		Total workload / 30	**3.067**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	It provides students with the ability to use theoretical and applied knowledge in the field of statistics.	4
2	It provides the ability to define problems, collect data, model and analyze them with appropriate statistical techniques.	3
3	It provides the ability to analyze and interpret data with up-to-date computer software and use it in statistical decision processes.	1
4	It provides students with the ability to use algorithms to solve the problem.	2
5	It provides students with the ability to conduct research individually and as a team member in applications in statistics and other fields.	3
6	It provides the ability to use basic concepts and principles in the fields of Probability, Statistics and Mathematics.	4
7	It provides awareness of professional ethics.	3
8	It provides the ability/motivation to understand and use English concepts.	1
9	It provides students with the ability to interpret and analyze basic concepts related to social sciences and humanities.	1
10	Having knowledge about quality management and processes and the ability to apply statistical methods in quality improvement.	2
11	It provides students with the ability to use appropriate statistical methods to develop better quality processes in their professional life.	2
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Barış ERGÜL	Araş. Gör. Dr. Zeynep İLHAN		
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PROGRAMMING LANGUAGES II	821414003

Semester	Number of Course Hours per Week		Credit	ECTS	
	Theory	Practice			
4	2	2	3	5	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Statistics and mathematics to solve problems using logic programming,
Short Course Content	This course focuses on advanced programming topics using the C# programming language. The course aims to improve programming skills of the student using algorithm development in C#. C programing language profile: Flow controls; Decision mechanizms, sequences and using pointer in C# . Input- output mechanizm, file construction, advanced programing, modeling data base with pointers.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3,5	5,6,10	A,G
2	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3,5	1,5,6,12	A,B,D
3	The ability to use suitable algorithms in order to solve the problem of interest	3,5	5,6,10	A,B,D
4	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3,5	6,7	B,D
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Bilgisayarda Temel Algoritmalar ve C++ Dili ile Programlama Örnekleri Prof.Dr. Mithat Uysal Visual C++ 2008.net Microsoft Yayınları
Supporting References	İleri programlama C Dili Murat Taşbaşı, C programlama Dili İbrahim Güney http://aliatalay.net/visualc.htm http://www.cplusplus.com/ http://www.programciyim.com/content/c-ders-notlari-ve-ders-anlatimi
Necessary Course Material	Computer, internet, projeksiyon

Course Schedule	
1	Structure of the C programming language and the concept of variable constants
2	Data input and output commands
3	Decision structures-loops
4	On the use of C language functions
5	Functions continue
6	The program errors on the search and removal
7	The concept and application of the console
8	Mid-Term Exam
9	The concept and application of the console
10	Comparison with the C and C + + structure and commands
11	Arrays in C + + on
12	String arrays and applications
13	Matrix Sequences with Applications
14	Multi-Dimensional Arrays
15	Mathematical Statistics and the use of functions
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	3	2	6
Homework	1	30	40
Quiz Exam	2	10	20
Studying for Quiz Exam	1	2	2
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	3	3
Final Exam	1	10	10
Studying for Final Exam			
		Toplam iş yükü	**150**
		Toplam iş yükü / 30	**5.0**
		Dersin AKTS Kredisi	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	10
Quiz	30
Bir öğe seçin.	
Mid-term	30
Final Exam	100
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Lecture Ali ATALAY			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
TECHNICAL ENGLISH I	821414XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	2	0	2	3

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	By the end of the course students should be able to: 1. Be able to understand and read the statistics books, thesis and articles, 2. Be conversant with English statistical terms ad concepts, 3. To translate the concepts and methods of statistics from English to Turkish.
Short Course Content	Statistical terms on descriptive and inferential statistics, measures of central tendency, measures of variation, measures of position, probability distributions, and estimation theory.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Learning the topics related to statistical concepts and techniques in English,	8	1,6	A
2	Learn the concepts of measures of central tendency and measures of variability in English	8	1,6,8,11	D
3	Learn basic probability theory and concepts in English.	8	1,6,8	A
4	Learn sampling theory and its concepts in English.	8	1,6,8	K
5	Learn the concepts of statistical estimation theory in English.	8	1,6,8	A
6				
7				
8				

*__Teaching Methods__ **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

__Measuring Methods__ **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Spiegel, M.R., Schiller, J., Srinivasan, R.A. (2013). Schaum's Outline of Probability and Statistics. Mc Graw Hill. Fourth Edition. USA.
Supporting References	
Necessary Course Material	Dictionary of statistical terms

Course Schedule	
1	Variables and Graphs
2	Frequency Distributions
3	The mean, median, mode and other measures of central tendency
4	The standard deviation and other measures of dispersion
5	Moments, skewness, and kurtosis
6	Moments, skewness, and kurtosis
7	Elementary probability theory
8	Mid-Term Exam
9	Elementary probability theory
10	The binomial, normal, and poisson distribuitons
11	The binomial, normal, and poisson distribuitons
12	Elementary sampling theory
13	Elementary sampling theory
14	Statistical estimation theory
15	Statistical estimation theory
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	2	28
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	2
Studying for Mid-Term Exam	1	8	8
Final Exam	1	1	2
Studying for Final Exam	1	8	8
		Total workload	**90**
		Total workload / 30	**3**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	1
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	5
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1
12		

LECTUTER(S)				
Prepared by	Prof.Dr. Özlem ALPU			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
TIME SERIES ANALYSIS	821414005

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	NONE
Objectives of the Course	To teach the fundamental concepts and methods of time series analysis and To introduce the time series and provide exercises in the application of forecasting to related problems and to gain the competence of interpreting the results.
Short Course Content	Time series and time series analysis, components of a time series, determination of time series components. Using the time series for forecasting, stages of analysis, selection of the an best forecasting method, trend analysis, moving averages, exponential smooting methods, ARIMA models

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Determine of the model for the time series data, estimation of the model parameters and understand of the forecasting concept,	1-2	1-2-5-6	A
2	Ability to analyze time series containing a small number of observations by hand and with the help of a calculator	1-2	1-5-6-11	A
3	Ability to analyze time series in computer environment using statistical package programs,	1-2-3-4	1-5-6-11	A
4	Ability to make predictions about an event using time series and interpret the results obtained	1-2-3-5	1-5-6-11	A
5	Gaining the ability to analyze and evaluate similar problems that arise in other disciplines.	1-2-3-5	1-5-6-11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Box, G.E.P and Jenkins, G.M. (1976), Time series analysis : Forecasting and Control, Holden-Say, Fransisco.
Supporting References	1. Özmen, A., (1986), Zaman Serisi Analizinde Box-Jenkins Yöntemi ve Banka Mevduat Tahmininde Uygulama Denemesi, Anadolu Üniversitesi,Eskişehir. 2. Akgül, I., (2003), Geleneksel Zaman Serisi Yöntemleri, D&R Yayınları, İstanbul. 3. Kadılar C., "SPSS Uygulamalı Zaman Serileri Analizi" Bizim Büro Basımevi, Ankara. 2009. 4. Montgomery D. C., Johnson L. A. and Gardiner J. S.(1994). Forecasting and Time Series Analysis,
Necessary Course Material	Calculator for calculations, computer/projector

Course Schedule	
1	Time series and time series analysis: Fundemental Concepts
2	Introduction to forecasting problems
3	Components of a time series: trend component, seasonality component, cyclical component and irregular component.
4	Moving Averages
5	Trend Analysis
6	Trend Analysis (cont.)
7	Time series and time series analysis: Fundemental Concepts
8	Mid-Term Exam
9	Determination of seasonality component
10	Determination of cyclical component
11	Exponential smooting methods
12	Exponential smooting methods (cont.)
13	Autocovariance, autocorrelation, partial autocorrelation functions and stationarity concept
14	ARIMA models
15	ARIMA models (cont.)
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1,5	1,5
Studying for Mid-Term Exam	7	4	28
Final Exam	1	1,5	1,5
Studying for Final Exam	7	4	28
		Total workload	**143**
		Total workload / 30	**4,77**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Fatih Çemrek			
Signature(s)				

Date:06.06.2024

T.C.

ESKISEHIR OSMANGAZI UNIVERSITY

FACULTY OF SCIENCES

DEPARTMENT OF STATISTICS

COURSE INFORMATION FORM

Course Name	Course Code
DECISION THEORY	821414XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	The aim of this course is to introduce students to Bayesian methods of inference and decision making.
Short Course Content	The course covers modeling uncertainty; rational decision-making principles; representing decision problems with value trees, decision trees, and influence diagrams; solving value hierarchies, decision trees and influence diagrams; defining and calculating the value of information; incorporating risk attitudes into the analysis; and conducting sensitivity analyses.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Identify the classical and Bayesian approaches in making a decision	1	1, 5, 6	A
2	Define and recognize the various types of decision situations	1	1, 2, 5	A, D
3	Gain knowledge about the game theory and use the basic concepts of game theory	1, 2	1, 5, 8, 10	A, D
4	Get an understanding of Bayes theorem for discrete and continuous probability models,	1, 2	1, 5, 8	A, F
5	Get an understanding of expected value of sample information.	1, 6	1, 5, 8, 10	A, D
6	Understand the significance of sequential decision making	1, 2, 6	1, 2, 5	A, D
7	Gain the fundamentals of Utility theory and its axioms	1, 6	1, 5, 8	A, D
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Peterson Martin. An Introduction to Decision Theory, Cambridge, United Kingdon ; New York, NY, USA : Cambridge University Press, [2017]
Supporting References	1. Winkler Robert L., *An Introduction to Bayesian Inference and Decision,* 2nd. Edn., Holt, Rinehart and Winston, INC, 2003 2. Lee, Peter, *Bayesian Statistics: An Introduction,* 2nd. Edn., Arnold, 1997. 3. Mustafa Aytaç, Necmi Gürsakal (editors), Decision Making, Dora Publishing, 2015. 4. Şenol Erdoğmuş, Decision Theory Lecture Notes, ESOGU, 2003
Necessary Course Material	

Course Schedule	
1	Introduction to Decision Theory – Basic Concepts and Definitions
2	Basic Components of Decision Models and Decision Making Environments
3	Decision-Making under Uncertainty Environment
4	Decision Making under Risk Environment
5	Probability Distributions for Bayesian Decision Making
6	Calculation of Posterior Probabilities and Bayesian Inference
7	The Value of Complete Knowledge
8	Mid-Term Exam
9	Sequential Decision Making and Decision Tree Models
10	Decision Tree Models and Its Applications
11	The Value of Additional Information
12	Sensitivity Analysis
13	Utility Theory and Its Axioms
14	Game theory
15	Game Theory
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam	14	2	28
Report (Preparation and presentation time included)	1	10	10
Project (Preparation and presentation time included)	1	10	10
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	15	15
Final Exam	1	2	2
Studying for Final Exam	1	15	15
		Total workload	**151**
		Total workload / 30	**5, 033**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Homework	10
Class Attendance	5
Select an item.	
Select an item.	
Final Exam	55
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision-making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

READER(S)				
Prepared by	Assist. Prof. Sevgi Abdalla (PhD)	Prof. H. Kıvanç Aksoy, MD		
Signature(s)				

Date:06.06.2024

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ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MATHEMATICAL STATISTICS I	821415XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The aim of the course is to explain mathematically the basic concepts of the Statistical Theory.
Short Course Content	Sigma-algebra, random variable, distribution function, marginal and conditional distributions, independence of random variables, expected value, covariance, correlation coefficient, transformations of random variables, some important probability distributions, inequalities, the law of large numbers and central limit theorem.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Students learn the sigma-algebra and random variable which are the basic concepts of the probability theory	1,6	1,5,6	A
2	Students learn the distribution function.	1,6	1,5,6	A
3	Students obtain the marginal and conditional probability distributions.	1,6	1,5,6	A,D
4	Students investigate the independence of random variables.	1,6	1,5,6	A,D
5	Students obtain the probability mass or probability density functions for transformations of the random variables.	1,6	1,5,6	A,D
6	Students learn the statistical convergence.	1,6	1,5,6	A,D

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Yılmaz AKDİ, Matematiksel İstatistiğe Giriş, Gazi Kitapevi, Ankara, 2010
Supporting References	İsmail ERDEM, Matematiksel İstatistik, Seçkin, Ankara,2012
Necessary Course Material	

Course Schedule	
1	Sigma and Borel algebra
2	Sigma and Borel algebra
3	Random Variable
4	Random Variable
5	Distribution Function
6	Marginal and conditional distributions
7	Marginal and conditional distributions
8	Mid-Term Exam
9	Independence of random variables
10	Expected value, covariance, correlation coefficient
11	Transformations of random variables
12	Transformations of random variables
13	Some important distributions
14	Inequalities
15	Statistical convergence
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3	42
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1.5	1.5
Studying for Mid-Term Exam	1	16	16
Final Exam	1	1.5	1.5
Studying for Final Exam	1	19	19
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	10
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ	Assoc. Prof. Dr. Gamze GÜVEN		
Signature(s)				

Date:05.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
OPERATIONS RESEARCH I	821415XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	4	0	4	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Identify the problems in human-machine systems, to provide modeling skills and to teach the necessary approaches and techniques for solution of problems.
Short Course Content	Methodology of operations research, basic concepts of linear programming (parameter, decision variable, constraint, objective), model building, graphical and simplex solution techniques, sensitivity analysis, duality,

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	1. Learn the basic concepts and stages of Operations Research,	1,2,4,5,11	1	A, D
2	2.To acquire basic knowledge about the techniques of Operations Research,	1,2,4,5,11	1	A, D
3	3. Being able to determine real life problems as decision problems,	1,2,3,6,7,9,10	1	A, D, J
4	4. Being able to formulate and solve models that can be solved by the techniques of Operations Research by using decision models	1,2,3,6,7,9,10	1	A, D, J
5	5. Being able to solve decision problems by using the software of Operations Research,	1,2,3,6,7,9,10	1	A, D, J
6	6. Students who take this course will have the ability to correctly identify the problems encountered in real life, model and solve problems by genrate solution approaches.	1,2,3,4,6,7,8,9,10	1	A, D, J
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Öztürk, A.(2016). Yöneylem Araştırması. Ekin Kitabevi. Winston, W.L.(2003).Operations Research Applications and Algorithms. Duxbury Press.
Supporting References	Michael W. Carter, Camille C. Price, Ghaith Rabadi (2018), Operations Research: A Practical Introduction (Advances in Applied Mathematics) 2nd Edition
Necessary Course Material	Books, articles, computers, projections etc.

Course Schedule	
1	Introduction to operations research
2	Operational research methodology
3	Linear programming: Model building
4	Linear programming: Model building
5	Linear programming: Graphical solution technique
6	SimplexAlgorithm: Standart Form and Basic solutions
7	SimplexAlgorithm: Special Cases
8	Mid-Term Exam
9	Duality: The Dual of a LP model
10	The relations between primal and dual solutions
11	Economical interpretation of a dual problem
12	Sensitivity analysis: some important formulas
13	Sensitivity analysis: Objective function coefficients, right-hand side constants
14	Dual Simplex method: Adding a new activity or new constraints
15	Presentation of computer package programs
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	14	2	28
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	1	10	10
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	25	25
		Total workload	171
		Total workload / 30	5,7
		Course ECTS Credit	6

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç Aksoy			
Signature(s)				

Date:05.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
REGRESSION ANALYSIS	821415XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	No
Objectives of the Course	1.To be able to model the functional relationship between variables, 2. To be able to analyze the created model, 3. To be able to predict and interpret the parameters of the model, 4.To be able to make statistical inferences for data obtained from various sources.
Short Course Content	Concept of Correlation and Regression, Estimation of Simple Linear Regression Model Parameters by ECC Method, Multiple Linear Regression, Parameter Estimation in Multiple Linear Regression, Nonlinear Regression Models

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Comprehend the econometric model structure	1	1,6,8,	A
2 Ability make linear/nonlinear model prediction	2,9	1,6,8,11	A
3 Ability Interpret linear/nonlinear model prediction results	2,9	1,5,6,8,11	A
4 Ability perform model significance tests	2,9	1,6,8,11	A
5 Ability Interpret correlation and determination coefficient	2,9	1,5,6,8,11	A
6 Ability analyze any given data set	2,9	1,5,6,8,11	A
7			
8			

*__Teaching Methods__ **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

__Measuring Methods__ **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Temel Ekonometri, Damodar N. Gujarati (Çev. Ümit Şenesen, Gülay Günlük Şenesen).
Supporting References	Applied Regression Analysis, Norman R. Draper and Harry Smith
Necessary Course Material	Calculator

Course Schedule	
1	The Concept of Correlation and Regression
2	Ordinary Linear Population Regression Model, Regression Equation and Sample Regression Equation
3	Ordinary Linear Regression Model, Principal Regression Equation and Sample Regression Equation
4	Standart error and variance of estimate, Belirlilik Katsayısı ve Esneklik
5	Coefficient of determination, Significance Tests and Confidence Interval for Specificity Coefficient and Slope Coefficient
6	Regression Analysis and Analysis of Variance
7	Linear Regression Model Assumptions and Characteristics of OLS Estimators
8	Mid-Term Exam
9	Estimation and Interpretation of Multiple Linear Regression Model Parameters with OLS
10	Standard Errors of Parameter estimations and Multiple Coefficient of determination
11	Significance Test of Regression Coefficients _t test
12	Significance Test of Regression Coefficients _F test
13	Multiple Linear Regression Model with Matrix Representation
14	Nonnlinear Regression Models
15	Estimation and Interpretation of Nonlinear Regression Models
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam	4	1	4
Studying for Oral Exam	4	3	12
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	25	25
Final Exam	1	1	1
Studying for Final Exam	1	25	25
		Total workload	**152**
		Total workload / 30	**5,06**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Gaye KARPAT ÇATALBAŞ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
SCIENTIFIC RESEARCH METHODS	821415004

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	NONE
Objectives of the Course	This course aims to have knowledge about the importance of scientific research and scientific research types, to search literature on a specific topic, to have knowledge necessary to prepare research plan, to have knowledge about professional ethics and principles
Short Course Content	The importance of scientific methods for positive science, review of the scientific research procedure, statistical description of research problems, planning of research project, collection of research data, organization of the data, analysis of the data, preparation of research report, concept of ethics and professional ethics and principles

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To be able to define basic concepts related to scientific research methods,	1-2-5	1-2-5	A
2	To be able to search the literature on a specific subject,	1-2	1-2-5-11	A
3	To be able to define the research topic statistically,	1-2-3-4-5	1-5-10-11	A
4	Plan research topic in accordance with scientific research method,	1-2-3-4-5	1-5-6-10-11	A
5	Having the ability to organize a research report.	1-2-3-5-11	1-5-8-15	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Çömlekçi N., 2001, Bilimsel Araştırma Yöntemi ve İstatistiksel Anlamlılık Sınamaları, Bilim Teknik Yayınevi..
Supporting References	Karasar N., 2005, Bilimsel Araştırma Yöntemi: Kavramlar, İlkeler, Teknikler. 15. bs. Ankara: Nobel Yayın Dağıtım.
Necessary Course Material	Statistical tables and calculator

Course Schedule	
1	The importance of scientific methods for positive science
2	Review of the scientific research procedure
3	Preparation of research project
4	Statistical description of research problem
5	Planning of research project
6	Random sampling design
7	Sampling design with types of random sampling
8	Mid-Term Exam
9	Collection of research data, data gathering instrument
10	Organization of the data, data processing
11	Classification of univariate and multivariate data
12	Analysis of the data
13	Preparation of research project
14	Preparation of research project
15	Professional ethics and principles
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1,5	1,5
Studying for Mid-Term Exam	7	2	14
Final Exam	1	1,5	1,5
Studying for Final Exam	7	2	14
		Total workload	**115**
		Total workload / 30	**3,83**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Fatih Çemrek			
Signature(s)				

Date:06.06.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
PARAMETER ESTIMATION	821415006

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No
Objectives of the Course	The purpose of this course is to teach the importance of parameter estimation in the sense of statistical theory, to investigate the properties of estimates.
Short Course Content	Sampling Distribution, Order statistics, Point Estimation; Best Linear Unbiased estimator; Sufficient statistics; Confidence regions, Relating hypothesis tests and confidence regions.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Learns the importance of parameter estimation in terms of statistical theory.	1,2,4,6	1,6	A,D
2	Learns the theoretical background of statistical parameter estimation.	1,2,4,6	1,6	A,D
3	Gains the ability to understand the scientific infrastructure of statistics.	1,2,4,6	1,6	A,D
4	Learns to compare statistical parameter estimation methods.	1,2,4,6	1,6,	A,D
5	Students gain the basic knowledge necessary for future scientific studies.	1,2,4,6	1,2,6	A,D

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Öztürk, F., Akdi, Y., Aydoğdu, H., Karabulut, İ., (2006). Parametre Tahmini ve Hipotez Testleri, Bıçaklar Kitabevi
Supporting References	Lehmann E. L., (1983). Theory of Point Estimation, John-Willey and Sons, NewYork. Lehmann E. L.,(1959). Thesting Statistical Hypothesis, John-Willey and Sons,NewYork. Rogathi V. K., (1976). An Introduction to Probability Theory and Mathematical Statistics, John-Willey and Sons, NewYork.
Necessary Course Material	

Course Schedule	
1	Parameter, Parameter space
2	Sampling Distribution
3	Sampling Distribution
4	Order statistics
5	Order statistics
6	Point Estimation
7	Best Linear Unbiased Estimation
8	Mid-term exam
9	Sufficient statistics
10	Parameter Estimation Methods
11	Parameter Estimation Methods
12	Parameter Estimation Methods
13	Confidence regions
14	Relating hypothesis tests and confidence regions
15	Applications
16,17	Final exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3.5	49
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	23	23
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	10
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ			
Signature(s)				

Date:04.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL SOFTWARES	821415007

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	In this course, aims to teach students how to make theoretical topics they have seen for four years in statistical software.
Short Course Content	Data entry, preparation of data to statistical analysis and making statistical analysis are explained in the statistical sowtwares.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Knows and uses statistical software.	1, 2, 3, 4, 8,11	1, 6	A
2	Can perform data entry in statistical software.	1, 2, 8	1, 6	A
3	With the statistical software, raw data can be prepared for analysis.	1, 2, 8	1, 6	A
4	Can perform simple statistical analysis with the statistical software.	1, 2, 3, 4, 8, 11	1, 6	A
5	It produces solutions to problems with the help of statistical software.	1, 2, 3, 4, 11	1, 6	A
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	EROL, H., SPSS Paket Programı ile İstatistiksel Veri Analizi, Nobel Kitabevi, ADANA, 2010.
Supporting References	Özdamar, K., Paket Programlar ile İstatistiksel veri Analizi I, 5. Basım, Kaan Kitabevi, ESKİŞEHİR, 2004. Özdamar, K., Paket Programlar ile İstatistiksel veri Analizi II Çok Değişkenli Analizler, 5. Basım, Kaan Kitabevi, ESKİŞEHİR, 2004. Tekin, V. N., SPSS Uygulamalı İstatistik Teknikleri, Seçkin Yayınevi, 2. Baskı, Ankara, 2009.
Necessary Course Material	Computer, Projector

Course Schedule	
1	Statistical softwares used for statistical analysis and introduction to SPSS
2	Data and variable view in SPSS, data entry and variable definition
3	Data menu in SPSS
4	Transform menu in SPSS
5	Analyze menü, descriptive statistics (Frequencies, descriptive statistics and data description)
6	Raw data, Ci-Square analysis with cross tabulations
7	Comparision of means – one sample t test
8	Mid-Term Exam
9	Comparision of means- independent two samples t test)
10	Comparision of means- paired samples
11	Comparision of means- One WAy Anova
12	Measure of relations between variables
13	Linear Regression Analysis
14	Multiple Linear Regression Analysis
15	Multiple Linear Regression Analysis (cont.)
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	28	28
Final Exam	1	2	2
Studying for Final Exam	1	28	28
		Total workload	**144**
		Total workload / 30	**4,8**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	5
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Assist. Prof. Dr. Özer ÖZAYDIN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
CASUALITY ANALYSIS IN TIME SERIES	821415009

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
4	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	NONE
Objectives of the Course	To introduce the concepts and tests of causality in time series, To provide exercises in the application of forecasting to related economical events
Short Course Content	Foracasting and time series analysis, forecasting techniques, testing for stationarity, with autocorrelation test and unit root tests, concepts related causality, testing for causality.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Apply knowledge of Time series analysis	1-2	1-2-5-6	A
2	To have the knowledge and culture for time series analysis techniques	1-2	1-5-6-11	A
3	To have the ability of investigation and determine the causal relations betweeen time series	1-2-3-4	1-5-6-11	A
4	To have the competence of evaluating and analyzing the similar problems which ocur in the the other disciplines.	1-2-3-5	1-5-6-11	A
5	Design and conduct experiments as well as to analyze and interpret data	1-2-3-5	1-5-6-11	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Işığıçok E.(1994). Zaman Serilerinde Nedensellik Çözümlemesi, Bursa
Supporting References	1. Kadılar C. (2000). Uygulamalı Çok Değişkenli Zaman Serileri Analizi, Ankara. 2. Sevüktekin M., Nargeleçekenler M., (2010), Ekonometrik Zaman Serileri Analizi, Eviews Uygulamalı, Geliştirilmiş 3.Baskı, Nobel Yayın Dağıtım, Ankara. 3. Montgomery D. C., Johnson L. A. & Gardiner J. S.(1994). Forecasting and Time Series Analysis, MCGraw-Hill, New York.
Necessary Course Material	Computer, projector

Course Schedule	
1	Introducing to time series analysis and stationarity
2	Introducing to time series analysis and stationarity (cont.)
3	Autocorrelation test for stationarity
4	Testing og stationarity: Unit Root Tests
5	Testing og stationarity: Unit Root Tests (cont.)
6	Testing og stationarity: Unit Root Tests (cont.)
7	Concepts for Causality
8	Mid-Term Exam
9	Concepts for Causality (cont.)
10	Direction of causality between variables
11	Causality tests: Granger Causality Test
12	Causality tests: Granger Causality Test:Computer Application
13	Causality tests: Sims Causality Test
14	Causality tests: Haugh Causality Test
15	General overview of causality tests
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1,5	1,5
Studying for Mid-Term Exam	7	4	28
Final Exam	1	1,5	1,5
Studying for Final Exam	7	4	28
		Total workload	**143**
		Total workload / 30	**4,77**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Fatih Çemrek			
Signature(s)				

Date:06.06.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MACHINE LEARNING	821415XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	It is aimed to provide information on the basic concept, methods and approaches in the Machine Learning field and to gain the ability to implement the students' machine learning methods to practical problems.
Short Course Content	Machine learning concepts and algorithms, selecting the appropriate machine learning algorithm, comparing the algorithm performance.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The basic concepts in the field of machine learning is the knowledge of the algorithms.	1,2,3,4	1,6	K
2	Gain the ability to model and solve practical problems using machine learning methods	1,2,3,4	1,6	A,D
3	It decides which machine learning method to the given data set is appropriate.	1,2,3,4	1,11	A,D
4	Can make evaluation and comparison using machine learning algorithms.	1,2,3,4	1,6,12	A,D
5	It finds estimates of parameters using estimation methods and then tests hypotheses about the parameters.	1,2,3,4	1,2,6	A,D

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Introduction to Machine Learning (Adaptive Computation and Machine Learning) by Ethem Alpaydin, 1st Edition, The MIT Press, October 2004.
Supporting References	Chris Bishop, Pattern Recognition and Machine Learning, Springer 2006 Ian Goodfellow , Yoshua Bengio , Aaron Courville, Deep Learning, The MIT Press, 2016
Necessary Course Material	Computer

Course Schedule	
1	Introduction to machine learning, basic terms, learning types, preparation of data.
2	Based on distance-based grouping, similarity and distance criteria.
3	K-Means Clustering, K-NN Classifier and Applications
4	Decision Trees, Regression Trees and Applications
5	Simple and multiple linear regression, logistic regression applications
6	Naive Bayes, Random Forests and Applications
7	Naive Bayes, Random Forests and Applications
8	Mid-term exam
9	Artificial neural networks, single and multi-layer A
10	Introduction to Support Vector Machines
11	Kernel Functions
12	Support Vector Machines Algorithms
13	Support Vector Machines Algorithms
14	Support Vector Machines Algorithms and Applications
15	Support Vector Machines Algorithms and Applications
16,17	Final exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3.5	49
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	23	23
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	10
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	4
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ			
Signature(s)				

Date:04.07.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ADVANCED TECHNICAL ENGLISH	821415XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	1. To improve students' professional English knowledge to enable them to better use English materials in the field of statistics, 2. To introduce English statistical terms and concepts, 3. To gain the ability to translate statistical techniques and concepts from English to TurkisH
Short Course Content	Scatter plots, regression line, correlation analysis, regression analysis, coefficient of determination, chi-square distribution, chi-square goodness of fit test, chi-square independence test, contingency table, F distribution and F test, one-way analysis of variance, two-way variance Discussion of statistical terms and concepts in analysis subjects.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Learning the English equivalents of topics related to statistical concepts and techniques	1,2,3, 4,5,11	1	A, D
2	Ability to translate statistical terms and concepts from English to Turkish	1,2,4,5,11	1	A, D

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Spiegel M. R. ve Stephens L. J., Theory and Problems of Statistics, 3rd. Edn., Schaum's Outline Series, McGraw-Hill, 1998.
Supporting References	
Necessary Course Material	Glossary of statistical terms

Course Schedule	
1	Statistical decision theory and hypothesis testing
2	Two-way and one-way tests
3	Small sampling theory
4	Chi-square distribution and Chi-square tests
5	Contingency tables and contingency coefficient
6	Curve fitting and least squares method
7	Non-linear relationship
8	Mid-term exam
9	Correlation Analysis
10	Least squares regression line
11	F distribution and F test
12	Variance analysis and one-way anova
13	Variance analysis and one-way anova (cont)
14	Non-parametric tests
15	Non-parametric (cont)
16,17	Final exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	14	1	14
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	1	5	5
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	25	25
		Total workload	**138**
		Total workload / 30	**4,6**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	10
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	1
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç AKSOY			
Signature(s)				

Date:04.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FINANCIAL RISK MANAGEMENT	821415008

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
5	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	The introduction, calculation, control of risk types in financial markets and teach the use of necessary tools for managing these risks
Short Course Content	The introduction of financial markets, introduction of market data sets, introduction and measurement of types of market risk (Volatility, Value-at-Risk, Expected Shortfall , Conditional Value-at-Risk and Extreme Value Theorem), controls of these (Backtesting and Stress Testing) and applications of financial risk management

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Having knowledge about financial markets	1,2,5,6,7	1,5,6,11,12	A
2	Having knowledge about the basic concepts of financial markets	1,2,5,6,7	1,5,6,11,12	A
3	Having knowledge about risk measurements and characteristics in financial markets	1,2,5,6,7	1,5,6,11,12	A
4	Having knowledge about financial risk management	1,2,5,6,7	1,5,6,11,12	A
5	Having knowledge about the risk management process in financial markets	1,2,5,6,7	1,5,6,11,12	A

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Danielsson, J., *Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk with Implementation in R and Matlab,* Wiley,2011 Mcneil, A. J., Frey, R., Embrechts, P., *Quantitative Risk Management: Concepts, Techniques and Tools*, Princeton University Press, 2005
Supporting References	Christoffersen, P.F., *Elements of Financial Risk Management*, Academic Press, 2003
Necessary Course Material	

Course Schedule	
1	Introduction of Financial Markets
2	Importance of Calculation and Management of Risk in Financial Markets
3	Introduction of Types of Risk in Financial Markets
4	Introduction of Data Sets and Their Features in Financial Markets
5	General Introduction and Application of Risk Measurement Techniques
6	Description and Application of Volatility (ARCH and GARCH Models)
7	Description and Application of Volatility (ARCH and GARCH Models)
8	Mid-Term Exam
9	Description and Application of Value-at-Risk
10	Description and Application of Conditional Value-at-Risk
11	Description and Application of Expected Shortfall
12	Description and Application of Extreme Value Theory
13	Description and Application of Backtesting and Stress Testing
14	Applications of Risk Management in Financial Markets I
15	Applications of Risk Management in Financial Markets II
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	4	8	32
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	36	36
Final Exam	1	2	2
Studying for Final Exam	1	36	36
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	50
Quiz	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:05.07.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MATHEMATICAL STATISTICS II	821416XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
SPRING	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The aim of the course is to explain mathematically the advanced concepts of the Statistical Theory.
Short Course Content	Sampling and the concepts of statistics, some sampling distributions, methods of finding estimator, properties of estimators, hypothesis testing.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Students learn the concepts of sampling and statistics	1,6	1,5,6	A,D
2 Students obtain the some important probability distributions such as Student's t, F and chi-square.	1,6	1,5,6	A,D
3 Students learn the methods of parameter estimation.	1,6	1,5,6	A,D
4 Students learn the properties of estimators.	1,6	1,5,6	A,D
5 Students learn the hypothesis testing.	1,6	1,5,6	A,D

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Yılmaz AKDİ, Matematiksel İstatistiğe Giriş, Gazi Kitapevi, Ankara, 2010
Supporting References	İsmail ERDEM, Matematiksel İstatistik, Seçkin, Ankara,2012
Necessary Course Material	

Course Schedule	
1	Sampling and concept of statistics
2	Student's t, F and Chi-square distributions.
3	Student's t, F and Chi-square distributions.
4	Method of moments
5	Method of maximum likelihood
6	Method of least squares
7	Method of Bayesian
8	Mid-Term Exam
9	Unbiasedness of estimator
10	Consistency of the estimator
11	Efficiency of estimator
12	Sufficiency of estimator
13	Asymptotic efficiency of estimator
14	Hypothesis testing
15	Hypothesis testing
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3	42
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1.5	1.5
Studying for Mid-Term Exam	1	16	16
Final Exam	1	1.5	1.5
Studying for Final Exam	1	19	19
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	10
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ	Assoc. Prof. Dr. Gamze GÜVEN		
Signature(s)				

Date:05.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
OPERATIONS RESEARCH II	821416XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	4	0	4	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	Identifying problems in human-machine systems, and to give the ability of modeling approach and teach the techniques needed to solve problems.
Short Course Content	Goal Programming (modeling and solution techniques), Assignment and transportation models (initial solution techniques, optimum solution techniques and sensitivity analysis ,) traveling salesman problems, Network models (minimum spanning tree problems , shortest path problems, maximum flow problems , CPM , PERT) and solution techniques

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	1.Determining, modeling and solving real-life problems as decision problems	1,2,4,5,11	1	A, D
2	2. Understanding to use of applied mathematical techniques in decision-making process,	1,2,4,5,11	1	A, D
3	3. Understanding the advantages and limits of deterministic operations research techniques for real-life problems	1,2,3,6,7,9,10	1	A, D, J
4	4. To understand the underlying algorithms for software programs İn operations research	1,2,3,6,7,9,10	1	A, D, J
5	A variety of techniques and concepts of operations research to implement real-life problems	1,2,3,6,7,9,10	1	A, D, J
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Öztürk, A.(2016). Yöneylem Araştırması. Ekin Kitabevi. Winston, W.L.(2003).Operations Research Applications and Algorithms. Duxbury Press.
Supporting References	Michael W. Carter, Camille C. Price, Ghaith Rabadi (2018), Operations Research: A Practical Introduction (Advances in Applied Mathematics) 2nd Edition
Necessary Course Material	Books, articles, computers, projections etc.

Course Schedule	
1	Difference of multi criteria and multi objective programming from linear programming, basic concepts
2	Goal Programming: modeling
3	Solution of variety of goal programming models using graphical technique
4	Solution of variety of goal programming models using simplex technique
5	Assignment problems
6	Assignment problems: solution techniques and sensitivity analysis
7	Transportation problems and initial solution techniques
8	Mid-Term Exam
9	Optimum solution techniques for transportation problems and sensitivity analysis
10	Introduction to Network problems
11	Minimum spanning tree problems , shortest path problems, maximum flow problems
12	CPM
13	PERT
14	Inventory theory
15	Inventory theory
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	14	2	28
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	1	10	10
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	25	25
		Total workload	171
		Total workload / 30	5,7
		Course ECTS Credit	6

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them	2
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques	3
12		

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç Aksoy			
Signature(s)				

Date:05.07.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ECONOMETRICS	821416XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3		3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	1. Knowledge of the concept of econometrics and econometric model, 2. Testing deviations from classical linear regression model assumptions and taking corrective measures against it, 3. Definition and estimation of dummy variable models
Short Course Content	Definition and content of econometrics, model concept, deviations from assumptions (normality, autocorrelation and heteroscedasticity, multiple linear correlation and model determination error), methods used in case of deviations from assumptions, estimation of dummy variable models

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Know econometric concepts and can make analyses	1	1,6,8,	A
2	Test assumptions about the econometric model	2,9	1,6,8,11	A
3	In cases where the assumptions of the econometric model are not satisfy, it can apply corrective measures.	2,9	1,5,6,8,11	A
4	Estimation and interpret dummy variable models	2,9	1,6,8,11	A
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Temel Ekonometri, Damodar N. Gujarati (Çev. Ümit Şenesen, Gülay Günlük Şenesen).	
Supporting References	Basic Econometrics (2008), Dawn C. Porter&Damador Gujarati	
Necessary Course Material	Calculator	

Course Schedule	
1	Econometrics and the concept of econometric model
2	Estimation stages of the econometric model
3	Normality assumption tests
4	The concept of multiple linear correlations, causes and consequences
5	Methods for detecting multiple linear correlations and methods for eliminating them
6	The concept of heteroscedasticity, its causes and consequences
7	Methods for detecting heteroscedasticity
8	Mid-Term Exam
9	Methods for eliminating heteroscedasticity
10	The concept of autocorrelation, causes and consequences
11	Methods for detecting autocorrelation
12	Methods for eliminating autocorrelation
13	Failure to model spesification, causes and consequences
14	Dummy variable models
15	Cases where dummy variable models are used
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam	4	1	4
Studying for Oral Exam	4	3	12
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	25	25
Final Exam	1	1	1
Studying for Final Exam	1	25	25
		Total workload	**152**
		Total workload / 30	**5,06**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Gaye KARPAT ÇATALBŞ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
QUALITY CONTROL	821416XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The main purpose of this course is to give our students a contemporary perspective on quality topics.
Short Course Content	Quality, quality control concepts and development of the quality in Turkey and World, Statistical Quality Control, Qualitative variables and basic structures of control charts for attributes, topics related with specifications, tolerance and standards, one -stage and two-stage acceptance sampling, and interperations of these concepts.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Comprehend the philosophy of Quality and Quality Control.	10, 11	1	A
2	Understand the concepts of Quality and Quality Control and their historical development.	10, 11	1	A
3	Will be able to apply quality control processes.	1, 2, 3, 4, 10, 11	1, 6	A
4	Will have knowledge of statistical quality control techniques.	1, 2, 3, 4, 10, 11	1, 6	A
5	Will be able to use statistical quality control techniques in real production processes.	1, 2, 3, 4, 10, 11	1, 6	A
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	N. BURNAK And E. AKTAR DEMİRTAŞ. Toplam Kalite Yönetiminde İstatistiksel Süreç Kontrolü. : Eskişehir Osmangazi Üniversitesi, 2019.
Supporting References	Erginel, N., Kalite Mühendisleri için El Kitabı, Nobel Yayınevi, 2020 Özkale Atıcıoğlu, M.R.,.Minitab ve SPSS Uygulamalı İstatistiksel Kalite Kontrol. Ankara: Seçkin Yayıncılık, 2022 Akkurt, M., Kalite Kontrol Excel Destekli, Birsen Yayınevi, İstanbul, 2002 Ertuğrul, İ., Toplam Kalite Kontrol, Ekin Kitabevi, Bursa, 2006. Öztürk, A., Kalite Yönetimi ve Planlaması, Ekin Yayınevi, Bursa,2009.
Necessary Course Material	Computer, Projector

Course Schedule	
1	Quality, control, quality control
2	Development of quality control
3	Quality control in the World and Turkey
4	Quality control and statistics, Statistical techniques used in quality control
5	Statistical techniques used in quality control (cont.)
6	Control Charts, Quality control charts for quantitative variables
7	Quality control charts for quantitative variables (cont.)
8	Mid-Term Exam
9	Statistical testing for production process
10	Determination the ability of process for quantiatative variables
11	Quality control charts for qualitative variables
12	Quality control charts for qualitative variables (cont.)
13	Determination the ability of process for qualitative variables
14	Acceptance sampling
15	Acceptance sampling (cont.)
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	28	28
Final Exam	1	2	2
Studying for Final Exam	1	28	28
		Total workload	**144**
		Total workload / 30	**4,8**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	5
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Assist. Prof. Dr. Özer ÖZAYDIN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
HYPOTHESIS TESTING	821416005

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No
Objectives of the Course	The purpose of this course is to teach theory of the statistical hypothesis. Thus, students will learn how to obtain the test statistics theoretically for the real life problems
Short Course Content	Hypothesis concept, Test statistics, main principles of hypothesis testing and applications of hypothesis testing.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Learn the theoretical background of the statistical tests	1,2,4,6	1,6	A,D
2	Acquire different perspectives for the solutions of the real life problems	1,2,4,6	1,6	A,D
3	Acquire talents for understanding the basis of the statistics	1,2,4,6	1,6	A,D
4	Learn to create statistical hypothesis tests.	1,2,4,6	1,6,	A,D
5	Understand basic concepts of statistics which is required for the scientific projects of the students in the future.	1,2,4,6	1,2,6	A,D

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Casella, G., Berger, R. L., (1990). Statistical Inference, Duxbury Press
Supporting References	Larsen, R. J., Marx, M. L., (1986). An Introduction to Mathematical Statistics and Its Applications, Prentice-Hall.
Necessary Course Material	Calculater

Course Schedule	
1	Hypothesis Concept, Significance level
2	Simple and Compound Hypotheses
3	Tests
4	Type I and II. Type Errors
5	Power Functions
6	Hypothesis Tests for a Single Population Parameter
7	Hypothesis Tests for a Single Population Parameter
8	Mid-term exam
9	Hypothesis Tests for Two Population Parameters (Related to the Mean)
10	Hypothesis Tests for Two Population Parameters (Related to the Ratio)
11	Hypothesis Tests on Two Population Parameters (Regarding Variances)
12	Hypothesis Tests for More than Two Population Parameters (One-Way Analysis of Variance)
13	Hypothesis Tests for More Than Two Population Parameters (One-Way Analysis of Variance)
14	Two-Way Analysis of Variance
15	Two-Way Analysis of Variance
16,17	Final exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3.5	49
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	23	23
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	10
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ			
Signature(s)				

Date:04.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
DEMOGRAPHIC TECHNIQUES	821416007

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	None
Objectives of the Course	To give about presentation and calculation of basic demographic indicators
Short Course Content	Demography; the basic concept of demography; population theories; population policies; the relationship between population and economy; history of population growth; census and demographic data sources; population projection methods; basic demographic techniques.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Determine appropriate data sources to be used in demographic techniques.	2	1	A
2	Perform simple demographic analyses.	1-2	1-5-6	A
3	Perform analyzes regarding births.	2-4-5-8-9	1-6-8	A
4	Perform analyzes regarding deaths.	2-4-5-8-9	1-6-8	A
5	Create a life table.	2-4-5-8-9	1-6-8	A
6	Make population projections.	2-4-5-8-9	1-6-8	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	**1**. Başar, E., (2013), Demografiye Giriş, Gazi Kitapevi, Ankara
Supporting References	**1.** Newell C., 1988, Methods and models in Demograph, Belhaven Pres, London **2.** Smith D.P., 1992, Formal Demograph, Plenum Press, New York and London **3.** Barclay G. W., 1958, Techniques of Population Analysis, John Wiley&Sons, Inc., New York, London, Sydney **4**. Shryock H.S., Siegel J.S. and Ass., 1976, The methods and materials of Demography, Academic Pres, New York,London, Toronto, Sydney, San Francisco
Necessary Course Material	Calculator

Course Schedule	
1	A general introduction to the study of demography, its content and concepts
2	The history of population growth in the World and Turkey
3	Population theories and population theories in Turkey
4	Population politics and population politics in Turkey
5	Population and economic development
6	Census and census methods
7	Analysis of age structure of population and population pyramid
8	Mid-Term Exam
9	Analysis of sex structure of population
10	Methods of measuring population change and population projection
11	Measurement of fertility : Crude birth rate, the child women ratio, general fertility rate
12	Measurement of fertility : Age specific fertility rate, total fertility rate
13	Reproduction rates: Gross reproduction rate, net reproduction rate, reproduction index
14	Measurement of mortality: Crude death rate, age specific death rate, infant death rate
15	Life tables: Constructing a life table, abridged life tables, life table functions and interpretation of the life table
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1.5	1.5
Studying for Mid-Term Exam	7	3	21
Final Exam	1	1.5	1.5
Studying for Final Exam	7	4	28
		Total workload	**136**
		Total workload / 30	**4.53**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof.Dr.Hatice Şamkar			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STOCHASTIC PROCESSES	821416008

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	The major objective of this course is to provide an in-depth examination of the theory, methods, and approaches to the analysis and design of stochastic systems as they occur throughout physical and human systems.
Short Course Content	Understand forecasting, inventory, reliability and service systems models. Markov Chains. Queuing systems.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Gain knowledge of Markov chains	1,2,4,5,11	1	A, D
2	Gain knowledge of model simple birth-death models	1,2,4,5,11	1	A, D
3	Gain knowledge of single channel exponential queuing models	1,2,3,6,7,9,10	1	A, D, J
4	Gain knowledge of open and closed network of queues.	1,2,3,6,7,9,10	1	A, D, J
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Introduction to Probability Models, 11th Ed. by Sheldon M. Ross, Academic Press, 2014.
Supporting References	Ross, S. M., Stochastic Processes, John Wiley & Sons , 1983
Necessary Course Material	

Course Schedule	
1	Probability review
2	Conditional probability and conditional expectation
3	Markov Chains
4	First step analysis
5	Some special Markov chains
6	The Long Run Behavior of Markov Chains
7	The Classification of States
8	Mid-Term Exam
9	Reducible Markov Chains
10	Poisson Process
11	Continuous Time Markov Chains
12	The limiting behavior of birth death process
13	Finite state continuous time Markov Chains
14	Queuing systems
15	Queuing systems
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	14	1	14
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	1	5	5
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	25	25
		Total workload	138
		Total workload / 30	4,6
		Course ECTS Credit	5

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them	2
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques	3
12		

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç Aksoy			
Signature(s)				

Date:05.07.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
DATA ANALYSIS	821416009

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	none
Objectives of the Course	The purpose of this course is to teach how to evaluate the data set in detail (in terms of symmetry, skewness, estimation of location and scale, outliers etc.) and to be able to decision which estimators to be used. Thus, students will gain a statistical data analysis practice for the real data set.
Short Course Content	Exploratory data analysis, Stem and leaf displays, Letter values, Box-plots, Q-Q plots, Tests for normality, Transformations to near normality, Resistant lines for y versus x, Identification of outliers, Robust location estimators, Robust scale estimators, Comparing locations estimators, Comparing scale estimators.

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Can examine the data encountered in practice in detail	1	1,6,11	A
2 Can perform the selection of appropriate estimators	2	1,6,11	A
3 Use and interpret appropriate data visualization tools	1,2,3	1,6,11	A,D
4 Perform preprocessing of the dataset	1,2	1,6,11	A,D
5 Detailed evaluation of data sets encountered in the real life problems and identify the suitable analysis depending on the data structure	2,3	1,6,11	A
6			
7			
8			

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Hoaglin, D. C., Mosteller, F., Tukey, J. W. (1983). Understanding Robust and Exploratory Data Analysis, John Wiley & Sons.
Supporting References	Huber, P. J. (1981). Robust Statistics, John Wiley & Sons.
Necessary Course Material	Computer, statistical tables, and calculator

Course Schedule	
1	Exploratory data analysis and role of graphics in data analysis
2	Stem and leaf displays
3	Letter values
4	Boxplots
5	Q-Q Plots for various distributions
6	Tests of outliers
7	Tests for normality
8	Mid-Term Exam
9	Transformations
10	Comparing location estimators
11	Robust location estimators
12	Comparing scale estimators
13	Robust scale estimators
14	M estimators of location/scale parameters
15	Computer applications
16,17	Final Exam

Calculation of Course Workload

Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	2	11	22
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**15**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Prof.Dr. Özlem ALPU			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FINANCIAL INVESTMENT MANAGEMENT	821416006

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	The introduction of the concept portfolio in the financial markets, the introduction of necessary tools for managing and modeling of portfolio data
Short Course Content	The introduction of financial markets, introduction of market data sets, introduction of portfolio, modelling portfolio data with Capital Asset Pricing Model (CAPM), Fama-French Models and Arbitrage Pricing Models, risk perception of individual and institutional investors, portfolio and risk management subjects

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Having knowledge about financial markets	1,2,5,6,7	1,5,6,11,12	A
2	Having knowledge about the investment management in financial markets	1,2,5,6,7	1,5,6,11,12	A
3	Having knowledge about portfolio management in financial markets	1,2,5,6,7	1,5,6,11,12	A
4	Having knowledge about risk management in financial markets	1,2,5,6,7	1,5,6,11,12	A
5	Having knowledge about the numerical analysis in financial markets	1,2,5,6,7	1,5,6,11,12	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Reilly F.K., Brown, K.C., *Investment Analysis and Portfolio Management*, Cengage Learning, 2011. Danielsson, J., *Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk with Implementation in R and Matlab,* Wiley,2011.
Supporting References	Fabozzi F., Focardi M. S., Kolm P.N., *Financial Modeling of the Equity Market: From CAPM to Cointegration,* John Wiley & Sons, 2006.
Necessary Course Material	

Course Schedule	
1	Introduction of Financial Markets
2	Introduction of Data Sets and Their Features in Financial Markets
3	Analysis of Data Sets in Financial Markets
4	Importance of Portfolio Management
5	The Method of Modelling Financial Market Portfolio Data I (CAPM Models)
6	The Method of Modelling Financial Market Portfolio Data II (Fama-French Factor Models)
7	The Method of Modelling Financial Market Portfolio Data II (Fama-French Factor Models)
8	Mid-Term Exam
9	The Method of Modelling Financial Market Portfolio Data II (Fama-French Models)
10	The Method of Modelling Financial Market Portfolio Data III (APT Models)
11	Importance of Risk Management in Financial Markets
12	Portfolio Risk Calculation Techniques I (Value-at-Risk) in Financial Markets
13	Portfolio Risk Calculation Techniques II (Conditional Value-at-Risk) in Financial Markets
14	Portfolio Risk Calculation Techniques III (Expected Shortfall) in Financial Markets
15	Applications of Portfolio Management in Financial Markets I
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	4	8	32
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	36	36
Final Exam	1	2	2
Studying for Final Exam	1	36	36
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	50
Quiz	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:05.07.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO DATA SCIENCE WITH PYTHON	821416XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	This course aims to teach the basic use of the Python programming language and the use of the major Python libraries developed for Statistics and Data Science.
Short Course Content	In Python, data structures, arithmetic operations, basic control structures, loops, functions, file operations, some important libraries related to data science and their applications will be taught.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Recognizes the Python programming language.	2, 3, 4, 8, 11	1, 6	A
2	Knows data structures and data entry in Python.	2, 3, 8	1, 6	A
3	Performs basic coding in Python.	3, 8	1, 6	A
4	Knows the libraries associated with data science in Python.	3, 4, 8, 11	1, 6	A
5	Performs basic statistical calculations in Python.	1, 2, 3, 4, 11	1, 6	A
6				
7				
8				

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Çobanoğlu, B., 2021, Veri Bilimi için Python, KODLAB Yayın Dağıtım Yazılım ve Eğitim Hizmetleri San. ve Tic. Ltd. Şti, İstanbul, 454 s.
Supporting References	*Aslan, İ., 2019, Python ile Veri Bilimi, Pusula 20 Teknoloji ve Yayıncılık A.Ş., İstanbul, 406 s.* *https://www.btkakademi.gov.tr/portal/search/course?q=python* https://python-istihza.yazbel.com/index.html
Necessary Course Material	Computer

Course Schedule	
1	Introduction to data science and Python programming, Python programming language setup
2	Use as a calculator (operators and arithmetic operations)
3	Variables, data types, data input-output operations
4	Decision structures, loops
5	Functions
6	String operations
7	Arrays, lists
8	Mid-Term Exam
9	Sets, tuples, dictionaries
10	Data read-write
11	Statistical calculations with Python
12	Libraries used in Python for data science (NumPy, Pandas)
13	NumPy, Pandas
14	Matplotlib, Seaborn
15	General repetition and application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	2	5	10
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)	1	10	10
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**148**
		Total workload / 30	**4,93**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Assist. Prof. Dr. Özer ÖZAYDIN			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

	Course Code
DATA ANALYSIS WITH SQL	821416XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
6	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Data structures, arithmetic operations, basic control structures, loops, functions, file operations, some important libraries related to data science and their applications will be taught with SQL.
Short Course Content	Database management software. Relational model: Data structure, normalization, data consistency, relational algebra. Data processing with SQL. Transaction management: Rollback, data compliance. Relational database theory: Dependency, normal forms. SQL data definitions and other features. DBMS architecture and implementations. Query optimization. Procedural extensions in SQL; PL/SQL, database triggering. DBMSs, OQL. Distributed databases, distributed architectures and ODBC. Database and Web. An application project is carried out by the students.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3,5	5,6,10	A,G
2	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3,5	1,5,6,12	A,B,D
3	The ability to use suitable algorithms in order to solve the problem of interest	3,5	5,6,10	A,B,D
4	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3,5	6,7	B,D
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Yazılımcılar için SQL Server 2014 & Veritabanı Programlama, Yaşar GÖZÜDELİ	
Supporting References	**An Introduction to Database Systems, C. J. DATE** Prof. Dr. Mithat Uysal - SQL Veritabanı Sorgulama Dili	
Necessary Course Material	Computer, internet, projeksiyon	

Course Schedule	
1	Introduction to Database Management Systems
2	Data and Data Types
3	Data and Data Types continuation and examples
4	assets
5	Database Design
6	Normalization Rules
7	Queries (Select, Add, Delete, Update)
8	Mid-Term Exam
9	Queries (Ready Functions)
10	Queries (Conditions, Loops)
11	Multiple Tables
12	Functions, Stored Procedures
13	Database Management
14	Server applications
15	SQL command applications
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	3	2	6
Homework	1	30	40
Quiz Exam	2	10	20
Studying for Quiz Exam	1	2	2
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	3	3
Final Exam	1	10	10
Studying for Final Exam			
		Toplam iş yükü	**150**
		Toplam iş yükü / 30	**5.0**
		Dersin AKTS Kredisi	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	10
Quiz	30
Bir öğe seçin.	
Mid-term	30
Final Exam	100
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	1
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Lecture Ali ATALAY			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS. DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
EXPERIMENTAL DESIGN I	821417001

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To introduce students to the standart concepts and methods of experimental design, modeling and to provide exercises in the application of simple experimental design to appropriate problems.
Short Course Content	Experiment, treatment and experimental error concepts, principles of experimental design, analysis of variance, completely randomized design, randomized blocks, latin squares, comparing pairs of treatment means, estimating missing values, estimating model parameters and the general regression significance test.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Design and conduct experiments as well as to analyze and interpret data	1,2,6	Expression	Exam
2	Allocate the steps of experimental design and decide to use which design for any type of data.	2	Expression	Exam
3	Decide which test is appropriate to use t or ANOVA and apply it.	1	Question-Answer	Exam
4	Apply randomized block design and Latin square design.	1	Expression	Exam
5	Analyse lost data and incomplete randomized block design.	1	Expression	Exam
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Deney Tasarımı İlke ve Teknikleri (Necla Çömlekçi)
Supporting References	Design and Analysis of Experiments (Montgomery) Design and Analysis of Experiments (Kempthorne) The Design and Analysis of Experiments (Mendelhall)
Necessary Course Material	

Course Schedule	
1	Experiment, experimental design, treatment and experimental error concepts
2	Principles of experimental design
3	Variance analysis assumptions, sum of squares, degree of freedom and mean square
4	Completely randomized design
5	Lsd, Duncan, Tukey and Dunnett test in completely randomized design
6	Unbalaced case in completely randomized design
7	Regression analysis in completely randomized design
8	Mid-Term Exam
9	Randomized blocks design
10	Missing value in randomized blocks design
11	Lsd, Duncan, Tukey and Dunnett test in the randomized blocks design
12	Regression analysis in randomized blocks design
13	Latin square design
14	Missing value in Latin square design, Lsd, Duncan, Tukey and Dunnett test
15	Regression analysis in Latin square design
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	6	84
Classroom Studying Time (review, reinforcing, prestudy,….)			
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**128**
		Total workload / 30	**4,2**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeynep FİLİZ			
Signature(s)				

Date:05.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MULTIVARIATE STATİSTICS	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The aim of this course is to teach the application of multivariate statistical methods and to give examples and exercises using real data.
Short Course Content	Multivariate data analysis and its application areas, data matrices and measurement scales, the multivariate normal distribution (MND), inferences about a mean vector, comparisons of several multivariate means, cluster analysis, discriminant analysis, logistic regression analysis, Principal component and factor analysis, Canonical correlation, multidimensional scaling.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to use both theoretical and applied knowledge in statistics	1,2,5	1,2,5,6,11	A,C,D
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	1,2,5	1,2,5,6,11	A,C,D
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	1,2,5	1,2,5,6,11	A,C,D
4	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1,2,5	1,2,5,6,11	A,C,D
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	**Uygulamalı Çok Değişkenli İstatistiksel Analiz, Hüseyin Tatlıdil, Ankara, 1992.**
Supporting References	1) Jobson, J, D.(1991). Applied Multivariate Data Analysis, Volume I-II, Springer-Verlag, New York. **2) Özdamar, K.(1999). Paket Programlar ile İstatistiksel Veri Analizi, Kaan Kitabevi, Eskişehir.**
Necessary Course Material	Statistical Lab.

Course Schedule	
1	Multivariate data analysis and its application areas
2	Data matrices and measurement scales
3	The multivariate normal distribution: the multivariate normal density and its properties, sampling from a MND and maximum likelihood estimation.
4	Inferences about a mean vector: Hotelling's T2 and Likelihood ratio tests.
5	Comparisons of several multivariate means: comparing mean vectors from two populations. One-way MANOVA
6	Cluster analysis: similarity measures, hierarchical clustering methods
7	Cluster analysis: Nonhierarchical clustering methods
8	Mid-Term Exam
9	Discriminant analysis: Classification with two multivariate normal populations.
10	Discriminant analysis: Classification with several populations.
11	Logistic regression analysis
12	Principal component analysis
13	Factor analysis: the factor analysis model and estimation, factor rotation, factor scores.
14	Canonical correlation
15	Multidimensional scaling
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	2	2	4
Homework	2	10	20
Quiz Exam	2	1	2
Studying for Quiz Exam	2	10	20
Oral exam	1	2	2
Studying for Oral Exam	1	10	10
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**158**
		Total workload / 30	**5.27**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	5
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeki YILDIZ			
Signature(s)				

Date:05.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL QUALITY CONTROL AND TOTAL QUALITY MAN. I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Once they have taken this course, they will be able to easily implement the quality control of statistical science they have studied in various sectors.
Short Course Content	Checking adequacy of model assumptions, Normality assumption, Independence assumption, Homogeneity of variances assumption, Outlier detection methods, Least squares estimation, Maximum likelihood estimation, Method of moment estimation, Effects of nonnormality on the estimators and test statistics, Alternative methods for analyzing nonnormal data.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	The Analysis of Variance, by Hardeo Sahai, Mohammed I. Ageel, Birkhauser, Boston, 2000.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Gamze GÜVEN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
REPEATED MEASURES EXPERIMENTS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To introduce the concepts and repeated measures experiments and to teach exercises in the application of repeated measures experiments to related problems.
Short Course Content	Multifactor experiments having repeated measures,two-factor experiment with repeated measures on one factor, three -factor experiment with repeated measures (caseI), three -factor experiment with repeated measures (caseII), tests of signifficiant in repeated measures experiments, assumptions, multiple comparisons in repeated measures experiments

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	B.J. Winer, Statistical Principles in Experimental Design
Supporting References	B.J. Winer, Statistical Principles in Experimental Design
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeynep FİLİZ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
APPLICATIONS OF STATISTICS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Providing skills that would help solve problems in real life
Short Course Content	Planning of a statistical research, How to manage a research project and model design

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	KURTULUŞ, K., (2004). Pazarlama Araştırmaları, Literatür yayıncılık
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Veysel YILMAZ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL PACKAGE PROGRAMS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Determining of an application according to the technique, collecting of data and data analysis.
Short Course Content	Data collecting, reaserching and understanding of the appropriate statistical software (minitab, SPSS, Statistica, SAS etc.) analysis of the data in the choosen software.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Text Book For Package Programs
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Özer ÖZAYDIN			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
METHODS FOR ANALYZING STATISTICAL DATA I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Students will gain a statistical data analysis practice for the real data set.
Short Course Content	Checking adequacy of model assumptions, Normality assumption, Independence assumption, Homogeneity of variances assumption, Outlier detection methods, Least squares estimation, Maximum likelihood estimation, Method of moment estimation, Effects of nonnormality on the estimators and test statistics, Alternative methods for analyzing nonnormal data.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	The Analysis of Variance, by Hardeo Sahai, Mohammed I. Ageel, Birkhauser, Boston, 2000.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Checking adequacy of model assumptions
2	Checking adequacy of model assumptions
3	Normality assumption
4	Normality assumption
5	Independence assumption
6	Independence assumption
7	Homogeneity of variances assumption
8	Mid-Term Exam
9	Homogeneity of variances assumption
10	Outlier detection methods
11	Outlier detection methods
12	Least squares estimation,Maximum likelihood estimation, Method of moment estimation
13	Least squares estimation,Maximum likelihood estimation, Method of moment estimation
14	Effects of nonnormality on the estimators and test statistics
15	Alternative methods for analyzing nonnormal data
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	All academic staff			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FINANCIAL MARKET ANALYSIS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Introduction to risk types in financial markets, examination of measurement techniques of these risks and their integration with the R/Matlab programming language.
Short Course Content	Introduction to the characteristics of financial markets and data sets, introduction to the types of risks in financial markets, techniques used to measure risks in markets, examination of Value at Risk, Expected Loss, Conditional Value at Risk and Extreme Values Method and their application in the R/Matlab programming language.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Danielsson, J., *Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk with Implementation in R and Matlab,* Wiley,2011
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MULTIVARIATE REPEATED MEASURES DESIGNS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To define the selected research problem correctly, to produce the solutions by doing the relevant literatüre reviews, to scientifically test the results obtained and to evaluate the test results.
Short Course Content	Determine of research problem, review the literatüre on the topic, Making research plan, preparation of research plan, determination of data related to research problem, selection of one of the sampling or integer techniques, analysis and application of the selected technique.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Experiment Design: Procedures for the Behavioral Sciences (Kırk)
Supporting References	B.J. Winer, Statistical Principles in Experimental Design
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeki YILDIZ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
RELIABILITY ANALYSIS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main objective of the course is presenting knowledge about performance, cost and reliability. Also introducing quality and safety concepts.
Short Course Content	Studies principles of the methods of risk assessment and reliability analysis including fault trees, decision trees, and reliability block diagrams. Discusses classical, Bayesian, and median rank methods for analysis of components and systems reliability

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	E. E. Lewis, Introduction to Reliability Engineering (John Wiley & Sons, 1994
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç AKSOY			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
QUALITATIVE DEPENDENT VARIABLES MODELS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to introduce qualitative dependent variable models and explores the mathematical structure of these methods.
Short Course Content	Data structure used in qualitative dependent variable models, random utility theory, latent variable theory, linear probability model, Probit model, Logit model and assumptions of these models, estimation of the model parameters, comparison of these models, goodness of fit tests

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Aldrich J.H. and Nelson F.D.(1984). Linear Probability, Logit and Probit Models, Sage Publications Inc.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Özlem ALPU			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ADVANCED DEMOGRAPHIC TECHNIQUES I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to enable students acquire indirect techniques of estimating demographic measures
Short Course Content	To introduce “modelling” concept to student and to learn about the use of demographic models.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Newell C., 1988, Methods and models in Demograph, Belhaven Press, London
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Hatice ŞAMKAR			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MAIN ECONOMIC INDICATORS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Teaching definition and concepts about basic economic indicators with details.
Short Course Content	Importance of the basic economic indicators and basic definitions and concepts about them: Indexes Calculated in Turkiye (CPI, PPI, etc.), definition of inflation and calculating methods, Exchange rates and factors that determine Exchange rates, interest rates, Money and fiscal policies that applied in Turkiye, GNP and GDP concepts

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Çepni, Elif (2005). Ekonomik Göstergeler ve İstatistikler Rehberi, Seçkin Yayıncılık.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Gaye KARPAT ÇATALBAŞ			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FORECASTING TECHNIQUES I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to introduce “forecasting techniqeus and concepts” to student and to learn about the use of the forecasting models
Short Course Content	Introduction to the forecasting techniques: Trend Analysis, Moving Averages, Ouantitative and Qualitative Forecasting Techniques, Errors of forecasting, Methods of Smoothing: Simple Smoothing Methods and Holt-Winters exponantial smoothing methods, decomposition methods, seasonal decomposition and seasonal smoothing methods

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Chatfield, C.,(2001), Time Series Forecasting, Boca Raton : Chapman & Hall/CRC
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Fatih ÇEMREK			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL ANALYSIS WITH SOFTWARES I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To teach the students how to perform statistical analyzes in computer environment.
Short Course Content	In a comprehensive investigation of the statistical analysis technique and then its application in proper statistical software or programing language.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Özdamar, K., Paket Programlar ile İstatistiksel veri Analizi I and II, 5. Basım, Kaan Kitabevi, ESKİŞEHİR, 2004.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Hülya ŞEN			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
KNOWLEDGE DISCOVERY I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Implementing a research project will be equipped with research development skils.
Short Course Content	Knowledge discovery in databases, basic concepts of data mining, machine learning, literature review, software implementations (R, Matlab, Weka, LISp-Miner and Enterprise Miner)

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Data Mining: Concepts and Techniques. J. Han and M. Kamber. Morgan Kaufmann, 2000.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Sevgi ABDALLA			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ROBUST STATISTICAL TECHNIQUES I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To teach how to check model assumptions before starting data analysis and to use alternative methods to analyze data that does not have a normal distribution.
Short Course Content	Checking adequacy of model assumptions, Normality assumption, Independence assumption, Homogeneity of variances assumption, Outlier detection methods, Least squares estimation, Maximum likelihood estimation, Method of moment estimation, Effects of nonnormality on the estimators and test statistics, Alternative methods for analyzing nonnormal data.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	The Analysis of Variance, by Hardeo Sahai, Mohammed I. Ageel, Birkhauser, Boston, 2000.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Checking adequacy of model assumptions
2	Checking adequacy of model assumptions
3	Normality assumption
4	Normality assumption
5	Independence assumption
6	Independence assumption
7	Homogeneity of variances assumption
8	Mid-Term Exam
9	Homogeneity of variances assumption
10	Outlier detection methods
11	Outlier detection methods
12	Least squares estimation,Maximum likelihood estimation, Method of moment estimation
13	Least squares estimation,Maximum likelihood estimation, Method of moment estimation
14	Effects of nonnormality on the estimators and test statistics
15	Alternative methods for analyzing nonnormal data
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Y. Murat BULUT			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MARKOV CHAIN APPLICATIONS I	821417XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Students will gain a statistical data analysis practice for the real data set.
Short Course Content	Checking adequacy of model assumptions, Normality assumption, Independence assumption, Homogeneity of variances assumption, Outlier detection methods, Least squares estimation, Maximum likelihood estimation, Method of moment estimation, Effects of nonnormality on the estimators and test statistics, Alternative methods for analyzing nonnormal data.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

*__Teaching Methods__ **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

__Measuring Methods__ **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	The Analysis of Variance, by Hardeo Sahai, Mohammed I. Ageel, Birkhauser, Boston, 2000.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Checking adequacy of model assumptions
2	Checking adequacy of model assumptions
3	Normality assumption
4	Normality assumption
5	Independence assumption
6	Independence assumption
7	Homogeneity of variances assumption
8	Mid-Term Exam
9	Homogeneity of variances assumption
10	Outlier detection methods
11	Outlier detection methods
12	Least squares estimation,Maximum likelihood estimation, Method of moment estimation
13	Least squares estimation,Maximum likelihood estimation, Method of moment estimation
14	Effects of nonnormality on the estimators and test statistics
15	Alternative methods for analyzing nonnormal data
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Barış ERGÜL			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

DEPARTMENT OF STATISTICS

COURSE INFORMATION FORM

Course Name	Course Code
SIMULATION	821417003

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	To develop simulation models of real or conceptual systems, To design an effective simulation experiment to run on the model, To analyze, to interpret and to present simulation results, To gain the ability to manage simulation projects
Short Course Content	Introduction to discrete-event system simulation, selecting input distributions, random number and random variate generation; Goodness-of-Fit Tests, model development, design and analysis of simulation experiments; introduction to various computer simulation languages and software, output analysis and model validation.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Will be able to define the basic concepts of simulation modeling	2	1, 5	A
2	Knows the methods of random numbers and random variable derivation methods for simulation modeling	1, 6	1, 5, 6	A, D
3	It compares and recognizes different types such as discrete event simulation, queue simulation, agent-based simulation, etc.	6	1, 8, 11	D, F
4	Simülasyon uygulamalarını ayrıntılı olarak tanır.	2, 4	6, 8, 10	F, I
5	It can simulate with various software.	3	11, 14, 15	D, E, G
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Discrete-Event System Simulation (4th edition); Banks, Carson, Nelson, and Nicol; Prentice Hall, 2005	
Supporting References	1.Evans, JR, Olson, DL 2001, Introduction to Simulation and Risk Analysis, Prentice Hall, New Jersey 2. Kelton, WD, Sadowski, R, Zupick, 2014, *Simulation with Arena*, McGraw-Hill	
Necessary Course Material	Computer, Projection machine, Python programing language, Excel and Arena Softwares	

Course Schedule	
1	Introduction to System Simulation - Basic Concepts (System and Model Definition and Classification)
2	General Principles and Simulation Examples
3	Statistical Models in Simulation - Discrete Distribution Functions
4	Statistical Models in Simulation - Continuous Distribution Functions
5	Random Number Generators- Testing Random Numbers
6	Random Variable Generators
7	Random Variable Generators
8	Mid-Term Exam
9	Queueing Models
10	Input Modelling – Parametre Estimation and ve Goodness-of- Fitting Tests
11	Output Analysis of a single system
12	Validation, Validity, and Credibility of Simulation Models
13	Alternative System Designs
14	Applications of Discrete-Event system simulation
15	Applications of Discrete-Event system simulation
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	1	10	10
Project (Preparation and presentation time included)	2	10	20
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	15	15
Final Exam	1	2	2
Studying for Final Exam	1	15	15
		Total workload	**154**
		Total workload / 30	**5,13**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	15
Homework	5
Class Attendance	5
Final Exam	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Sevgi Abdalla	Prof. Dr. H. Kıvanç Aksoy		
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

DEPARTMENT OF STATISTICS

COURSE INFORMATION FORM

Course Name	Course Code
QUALITY MANAGEMENT	821417004

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	None
Objectives of the Course	The course aims to transfer skills, based on clear and schematic notions, methodologies, tools and application techniques used concretely in the various sectors of the production field.
Short Course Content	Basic concepts of quality and quality management, quality tools and techniques in process management, continuous improvement: kaizen, quality indicators, quality cost, quality assurance systems, quality engineering

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Define the basic principles and elements of TQ	10	1, 5, 8	D, F, G
2	Explain principles of statistical thinking as a basis for effective management Topics	2, 6, 11	1, 5, 13	D, G
3	Illustrate the application of a variety of tools for process improvement	10, 11	1, 8, 15	D, F
4	Distinguish the mechanisms of the basic tools (approaches, methods, and techniques) for the practical implementation of a TQM program.	2, 10	1, 6, 8,	A, D
5	Employ quality management principles to institutional performance management	2, 11	1, 8, 15	A, D, J
6	Use effective leadership and organization change system for performance excellence	10, 11	6, 8	A, F
7	Identify effective TQM implementation process and obstacles	10, 11	1, 6, 11	E, F, J
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Total Quality Management Revised Edition: For Anna University, 3/e. 2016. Dale H. Besterfield, Carol Besterfield-Michna, Glen H. Besterfield, Mary Besterfield-Sacre, Hemant Urdhwareshe, Rashmi Urdhwareshe, Pearson
Supporting References	5. Küçük, O., 2016, Toplam Kalite Yönetimi-Sınırsız İyileşme EFQM Mükemmellik Modeli, Seçkin Yayıncılık, 368 s. 6. David L. Goetsch, Stanley B. Davis, 2017, Toplam Kalite Yönetimi-Toplam Kaliteye Giriş, Nobel Akademik Yayıncılık, 470 s. 7. Ertuğrul, İ., 2014, Toplam Kalite Kontrol, Ekin Kitabevi Yayınları, 456 s.
Necessary Course Material	Computer, Projection machine, Excel software, Presentation software and tools

Course Schedule	
1	Introduction to Total Quality Management and its basic concepts
2	Leadership in Quality Management
3	Customer Satisfaction
4	Motivation and empowerment of employees in Total Quality Management
5	Continuous process improvement: Kaizen
6	Performance measures in Total Quality Management
7	Benchmarking in TQM
8	Mid-Term Exam
9	Total Quality Management Systems-ISO 9000 series
10	Environmental Management system - ISO 14000 series
11	Quality Function Deployment
12	Quality by Design
13	Failure Mode Effects Analysis
14	Total Productive Maintenance (TPM) and Management Tools
15	Taguchi's Quality Engineering
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	2	10	20
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)	3	5	15
Project (Preparation and presentation time included)	3	5	15
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	2	5	10
Final Exam	1	3	3
Studying for Final Exam	3	5	15
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Homework	20
Class Attendance	5
Final Exam	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	5
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	5

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Sevgi Abdalla			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL TECHNIQUES FOR MARKETING RESEARCH I	821417006

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
Fall	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Designing the marketing research process according to the scientific research method considering the statistical point of view. Expressing the research problem and designing appropriate methods for data collection. Collecting data and determining appropriate statistical techniques and analysing and reporting with statistical software.
Short Course Content	Discussion of the research topic, data collection process, design of hypothesis and research models.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Gains the ability to define problems, data collection, modelling and analysis with appropriate statistical techniques.	1,2,5,6	1,5,6,7,15	A,F,G
2	Gains the ability to analyse and interpret data with current computer software and to use them in statistical decision-making processes.	1,2,5,6	1,5,6,7,15	A,F,G
3	Gains the ability to conduct research individually and as a team member in applications in statistics and other fields.	1,2,5,6	1,5,6,7,15	A,F,G
4	Gains the ability to use algorithms for problem solving.	1,2,5,6	1,5,6,7,15	A,F,G
5	Gains the ability to use theoretical and practical knowledge in the field of statistics.	1,2,5,6	1,5,6,7,15	A,F,G
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	1. Instructor's lecture note book, 2.KURTULUŞ, K., (2004). Marketing Research, Literature Publishing 3.NAKİP, M. (2006) Marketing Research Techniques and SPSS supported applications, Seçkin Publishing House, Ankara
Supporting References	1. KOTLER, P., (1991). Marketing Management Analysis, Implementation and Control, Prentice – Hall Internation Inc. 2.ODABAŞI, Y., (1998). Tüketici Davranışı ve Pazarlama Stratejisi, Anadolu Üniversitesi 3.SHARMA, S. ,(1993). Applied Multivariate Techniques, John Wiley and Sons Inc, New York. 4.TABANICK, G.B. FIDELL, L.S., (1996). Using Multivariate Statistics, Harper Collngs College Publisher Inc., New York.
Necessary Course Material	Computer

Course Schedule	
1	Discussion of the research topic
2	Preliminary evaluations related to the research project
3	Selection of the research topic
4	Designing Research Hypotheses
5	Designing the research model
6	Data preparation process
7	Coding
8	Midterm Exams
9	Conducting a pilot study
10	Choice of data analysis strategy
11	Marketing research hypotheses
12	Hypothesis testing and statistical software applications
13	Categorical data analysis and statistical software applications
14	Compliance analysis and statistical software applications
15	Statistical software applications
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	2	2	4
Homework	1	30	40
Quiz Exam			
Studying for Quiz Exam	1		
Oral exam	1	2	2
Studying for Oral Exam	1	10	10
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)	2	10	20
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	1	1
Final Exam	1	10	10
Studying for Final Exam	14	3	42
		Total workload	**151**
		Total workload / 30	**5,03**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	5
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	5
12		

LECTUTER(S)				
Prepared by	Prof.Dr.Veysel YILMAZ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MONEY AND CAPITAL MARKETS	821417005

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Identification of the definition and function of money in financial markets
Short Course Content	The definition of money, its functions, disclosure of the basic functions of financial markets and intermediary institutions, monetary policy tools and their effects on the money market, the monetary policy of the Central Bank, inflation, exchange rates, theory of interest

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Having knowledge about the functioning of financial markets	1,2,5,6,7	1,5,6,11,12	A
2	Having knowledge about financial market terms	1,2,5,6,7	1,5,6,11,12	A
3	Having knowledge about the functioning of money markets	1,2,5,6,7	1,5,6,11,12	A
4	Having knowledge about the functioning of capital markets	1,2,5,6,7	1,5,6,11,12	A
5	Having knowledge about the banking system	1,2,5,6,7	1,5,6,11,12	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Mishkin F. S. **"***The Economics of Money, banking ad financial markets***"** Addison Wesley: NewYork, 2009
Supporting References	Parasız İ."*Para Banka ve Finansal Piyasalar"*.Ezgi Kitapevi,2003 Keyder N. " *Para teori-politika-uygulama*", Bizim Hür Basım evi, 2002
Necessary Course Material	

Course Schedule	
1	Definition and functions of Money
2	Definition and functions of Money
3	Interest rates
4	Interest rates
5	Theories of Interest
6	Theories of Interest
7	Financial markets and institutions
8	Mid-Term Exam
9	Financial markets and institutions
10	Politics of Money
11	Politics of Money
12	Determination of exchange rate
13	Determination of exchange rate
14	Inflation
15	Inflation
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	4	8	32
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	36	36
Final Exam	1	2	2
Studying for Final Exam	1	36	36
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	50
Quiz	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:05.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL COMPUTING I	821417008

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Basic statistical concepts and techniques, distributions, sampling and estimation issues to be handled in general terms.
Short Course Content	Random variables, moment concept, some important inequalities, discrete probability distributions, continuous probability distributions, sampling and sampling distributions, estimation.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of statistics.	1,4,6,7,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Olasılık ve İstatistiğe Giriş Prof. Dr. Salih Çelebioğlu – Prof.Dr. Reşat Kasap
Supporting References	Olasılık ve İstatistik Prof.Dr. Fikri Akdeniz, Olasılık ve İstatistik Prof.Dr. Semra Erbaş
Necessary Course Material	Calculater

Course Schedule	
1	Expected values and variances of discrete and continuous random variables,
2	The concept of moment, some important inequalities, law of large numbers
3	Discrete probability distributions
4	Discrete probability distributions Continuous probability distributions
5	Continuous probability distributions
6	Continuous probability distributions
7	Sampling and sampling distributions
8	Mid-Term Exam
9	Sampling and sampling distributions
10	Interval estimation, interval estimation for the mean mass
11	Interval estimation for large samples
12	Interval estimation for small samples
13	The mean difference between the estimated mass range for independent samples
14	Mass for the proportion of interval estimation, interval estimation for the difference in two rates
15	Interval estimation of variance and standard deviation, Interval estimation for two variance ratio
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**136**
		Total workload / 30	**4,5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Hülya ŞEN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ECONOMETRICS II	821417009

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	Regression Analysis
Objectives of the Course	To be able to apply the basic issues related to econometrics using up-to-date data with the help of econometric package programs (Eviews, Stata, SPSS, etc.)
Short Course Content	Estimation of Simple and Multiple Linear/Nonlinear Regression Model, Testing Econometric Model Assumptions, Interpretation of Results, Dummy Variable Models, Model Selection, Basic Time Series Analysis with the Help of Econometric Package Program(s).

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Choose the appropriate method of econometric analysis and use econometric programs.	2,3,9	1,6,11	A
2	Estimate simple and Multiple Linear/Nonlinear Regression model with econometric programs.	2,3,9	1,6,11	A
3	Use estimation and inference methods required for basic time series analysis	2,3,9	1,6,11	A
4	Estimate dummy variable models with econometric programs.	2,3,9	1,6,11	A
5	Interpret the information obtained as a result of the analysis	2,3,9	1,6,11	A
6	Detect deviations from assumptions and take corrective measures to address the relevant problem.	2,3,9	1,6,11	A
7	Calculate the descriptive statistics of variables with econometric programs.	2,3,9	1,6,11	A
8				

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	H. Özkoç ve M. H. Van (2013). Ekonometri I, Nobel Yayınevi. Ekonometrik Programların kullanıcı klavuzları	
Supporting References	S. Güriş (2017). Eviews ile Temel Ekonometri R. Tarı (2010). Ekonometri, Umuttepe Yayınları.	
Necessary Course Material	Computer	

Course Schedule	
1	Information on the Statistical Package Program(s) to be Used
2	Estimation and interpretation of Ordinary Linear Regression Model with OLS
3	Estimation and interpretation of Multiple Linear Regression Model with OLS
4	Other Tests Used in a Multiple Regression Model
5	Assumption of Normality
6	Multicollinearity
7	Heteroscedasticity
8	Mid-Term Exam
9	Autocorrelation
10	Model Spesification Error
11	Remedial measures in case of assumption distortion
12	Estimation and interpretation of Ordinary and Multiple Nonlinear Models with OLS
13	Estimation and interpretation of Dummy Variable Models
14	Time Series Analysis: Unit Root Tests
15	Time Series Analysis: Granger Causality Tests
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	8	3	24
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**152**
		Total workload / 30	**5,06**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Dr. Gaye KARPAT ÇATALBAŞ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
RISK ANALYSIS AND INSURANCE	821417010

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	General concepts about insurance risk measurement and risk management
Short Course Content	Risk premium calculations in insurance, statistical distributions used in insurance

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Having knowledge about the terms used in insurance	1,2,5,6,7	1,5,6,11,12	A
2	Having knowledge about the statistical models used in insurance	1,2,5,6,7	1,5,6,11,12	A
3	Having knowledge about risk models used in insurance	1,2,5,6,7	1,5,6,11,12	A
4	Having knowledge about premium calculations in insurance	1,2,5,6,7	1,5,6,11,12	A
5	Having knowledge about risk management in insurance	1,2,5,6,7	1,5,6,11,12	A

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Boland, P. J. "*Statistical and Probabilistic Methods in Actuarial Science*", Chapman & Hall/CRC Interdisciplinary Statistics, 2007
Supporting References	Bowers N.L., Gerber H.V., Hickman J.C., Jones D.A. and Nesbitt C.J. "*Actuarial Mathematics*", SOA, USA, 1997
Necessary Course Material	

Course Schedule	
1	Definition and types of risk
2	Definition and types of insurance
3	Statistical distributions
4	Statistical distributions
5	Risk premium calculations
6	Risk damage calculations
7	Definition of methods of calculating total damage distribution
8	Mid-Term Exam
9	Definition of methods of calculating total damage distribution
10	Method of convolution
11	Method of convolution
12	Compound distribution approach
13	Compound distribution approach
14	Normality approach
15	Normality approach
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	4	8	32
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	36	36
Final Exam	1	2	2
Studying for Final Exam	1	36	36
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	50
Quiz	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:05.07.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL ANALYSIS USING MATLAB I	821417007

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	The aim of this course is to provide students with performing statistical analysis using MATLAB software program.
Short Course Content	Introduction and installation of the MATLAB program, data entry and calling data from different programs, vector and matrix operations, basic mathematical calculations, calculation of descriptive statistics, random number generation, parameter estimation and hypothesis testing.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Students recognize the MATLAB program and learn how to install it.	1,2,3,4	1,6	K
2	Students learn how to enter data into the MATLAB program.	1,2,3,4	1,6	A,D
3	Students perform vector and matrix operations via MATLAB program.	1,2,3,4	1,11	A,D
4	Students learn to the mathematical and statistical analysis using MATLAB program.	1,2,3,4	1,6,12	A,D
5	Students calculate the estimation of parameters using MATLAB program and then test the hypothesis.	1,2,3,4	1,2,6	A,D

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Computational Statistics Handbook with Matlab, Wendy L. Martinez, Angel R. Martinez Chapman & Hall/CRC.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Introduction and installation of Matlab program
2	Introducing the toolbar, command window and directories of Matlab program
3	Data entry into Matlab program and calling data from different programs
4	Vector and matrix operations in Matlab program
5	Basic mathematical calculations and loops in Matlab program
6	Calculation of descriptive statistics in Matlab program
7	Calculation of descriptive statistics in Matlab program
8	Mid-term exam
9	Random number generation
10	Tabulating data and drawing graphs
11	Parameter estimation
12	Constructing confidence intervals
13	Hypothesis tests
14	Applications in Matlab program
15	Applications in Matlab program
16,17	Final exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3.5	49
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	23	23
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	5
Final Exam	55
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	5
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ			
Signature(s)				

Date:04.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL ANALYSIS USING R I	821417013

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
7	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	None
Objectives of the Course	This course provides students with the ability to solve problems in real life by using R program and to apply statistical techniques.
Short Course Content	Introduction to R, R basics, data structures, entry of data, plotting, probability and distributions, discrete and continuous distributions, descriptive statistics.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Identify entry of data, data reading, data cleaning, validation and transformation functions, data frames, vector, matrix commands in R	1,3,4	1,6,11	A,D
2	Use basic functions, operators and loops	3,4	1,6,11	A,D
3	Detailed evaluation of descriptive and inferential statistics	3,4	1,6,11	A,D
4	Develop codes for statistics applications with R	1,2,3,4	1,6,11	A,D
5	Perform statistical analysis of univariate and multivariate data with R	1,3,4,11	1,6,11	A,D
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Verzani J, 2001, Using R for Introductory Statistics, Chapman & Hall.
Supporting References	Crawley., M. J., 2007, The R Book, Wiley
Necessary Course Material	Computer

Course Schedule	
1	A brief introduction to R, load R packages
2	R Fundamentals:Workspace, command line, derived variables, numbers
3	R Fundamentals:Objects, Operators, Tables, Lists
4	Accessing data, data manipulation
5	R Fundamentals: Matrix operations, vectors, factors
6	Functions and loops
7	Graphics in R
8	Mid-Term Exam
9	Graphics in R
10	Contingency tables
11	Descriptive statistics
12	Probability distributions
13	Discrete distributions
14	Continuous distributions
15	Algoritms additional points on the use of R
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	2	14	28
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**156**
		Total workload / 30	**5,2**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Prof.Dr. Özlem ALPU			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS. DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
EXPERIMENTAL DESIGN II	821418001

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	4

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	To introduce students to the standart concepts and methods of experimental design, modeling and to provide exercises in the application of simple experimental design to appropriate problems.
Short Course Content	Experiment, treatment and experimental error concepts, two-factor factorial design, avarage effect of A and B, and interaction effect, and three-factor factorial design.parameters and the general regression significance test.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Design and conduct experiments as well as to analyze and interpret data	1,2,6	Expression	Exam
2	Allocate the steps of experimental design and decide to use which design for any type of data.	2	Expression	Exam
3	Apply two-factor factorial design.	1	Expression	Exam
4	Apply three-factor factorial design.	1	Expression	Exam
5	Decide which models is appropriate in two-factor factorial design and three-factor factorial design.	1	Expression	Exam
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Deney Tasarımı İlke ve Teknikleri (Necla Çömlekçi)
Supporting References	Design and Analysis of Experiments (Montgomery) Design and Analysis of Experiments (Kempthorne) The Design and Analysis of Experiments (Mendelhall)
Necessary Course Material	

Course Schedule	
1	Experiment and treatment concepts
2	Two-factor factorial design.
3	Lsd, Duncan, Tukey and Dunnett test in two-factor factorial design.
4	Regression analysis in two-factor factorial design.
5	Models in two-factor factorial designs
6	Examples of two-factor factorial design.
7	Application in SPSS of two-factor factorial design.
8	Mid-Term Exam
9	Three-factor factorial design.
10	Lsd, Duncan, Tukey and Dunnett test in three-factor factorial design.
11	Regression analysis in three-factor factorial design.
12	Models in three-factor factorial designs
13	Examples of three-factor factorial design.
14	Application in SPSS of three-factor factorial designs
15	Three-factor factorial design.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	6	84
Classroom Studying Time (review, reinforcing, prestudy,….)			
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**128**
		Total workload / 30	**4,2**
		Course ECTS Credit	**4**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Zeynep FİLİZ			
Signature(s)				

Date:05.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
NONPARAMETRIC STATISTICS	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
SPRING	4	0	4	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The aim of this course is to teach the application of nonparametric statistical methods and to give examples and exercises using real data.
Short Course Content	Measurement scales, rank-order statistics, some important terminology, the one-sample tests, making inference about a location parameter, randomness tests, goodness-of-fit tests, two-samples tests, procedures that utilize data from three or more independent (or related) samples, rank correlation and other measures of association.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	The ability to use both theoretical and applied knowledge in statistics	2,3,5	1,2,5,6,8	A,C,D
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	2,3,5	1,2,5,6,8	A,C,D
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2,3,5	1,2,5,6,8	A,C,D
4	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2,3,5	1,2,5,6,8	A,C,D
5				
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Gamgam, H. Ve Altunayak, B., (2008), Parametrik Olmayan Yöntemler, Gazi Kitabevi, Ankara.
Supporting References	1) Canküyer, E. Ve Aşan, Z., (2004), Parametrik Olmayan İstatistiksel Teknikler, Anadolu Üniversitesi, Eskişehir. 2) Daniel, W., W., Aplied Nonparametric Statistics, Houghton Mifflin Copmpany, Boston, 1978.
Necessary Course Material	Statistical Lab.

Course Schedule	
1	Some important terminology.
2	The power and efficiency of a hypothesis test, measurement scales
3	Making inferences about a location parameter (the one-sample sign test, the Wilcoxon signed-ranks test, the binomial test)
4	Making inferences about a location parameter (the one-sample runs test for randomness, the Kolmogorov-Smirnov one-sample test)
5	procedures that utilize data from two independent samples (the median test, the Mann-Whitney test)
6	procedures that utilize data from two independent samples (the Fisher exact test, the Kolmogorov-Smirnov two-sample test)
7	procedures that utilize data from two related samples (the sign test for two related samples)
8	Mid-Term Exam
9	procedures that utilize data from two related samples (the Wilcoxon matched-pairs signed-ranks test)
10	Chi-Square tests of independence and homogeneity
11	procedures that utilize data from three or more independent samples (the Kruskal-Wallis ANOVA by ranks)
12	procedures that utilize data from three or more independent samples (multiple comparisons)
13	procedures that utilize data from three or more related samples (the Friedman two-way ANOVA by ranks)
14	procedures that utilize data from three or more related samples (multiple comparisons)
15	rank correlation and other measures of association
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	4	56
Classroom Studying Time (review, reinforcing, prestudy,….)	2	2	4
Homework	2	10	20
Quiz Exam	2	1	2
Studying for Quiz Exam	2	10	20
Oral exam	1	2	2
Studying for Oral Exam	1	10	10
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**158**
		Total workload / 30	**5.27**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	1
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	5
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeki YILDIZ			
Signature(s)				

Date:05.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL QUALITY CONTROL AND TOTAL QUALITY MAN. II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Once they have taken this course, they will be able to easily implement the quality control of statistical science they have studied in various sectors.
Short Course Content	Robust parameter estimation, Nonparametric parameter estimation, Least-Absolute-Deviations Regression, M-Regression, Nonparametric regression, Other regression methods, Robust experimental design, Nonparametric experimental design, Comparing robust and nonparametric methods.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Understanding Robust and Exploratory Data Analysis by David C. Hoaglin, Frederich Mosteller, John W. Tukey, John Wiley & Sons, 1983.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Gamze GÜVEN			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
REPEATED MEASURES EXPERIMENTS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To introduce the concepts and repeated measures experiments and to teach exercises in the application of repeated measures experiments to related problems.
Short Course Content	Multifactor experiments having repeated measures,two-factor experiment with repeated measures on one factor, three -factor experiment with repeated measures (caseI), three -factor experiment with repeated measures (caseII), tests of signifficiant in repeated measures experiments, assumptions, multiple comparisons in repeated measures experiments

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	B.J. Winer, Statistical Principles in Experimental Design
Supporting References	B.J. Winer, Statistical Principles in Experimental Design
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeynep FİLİZ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
APPLICATIONS OF STATISTICS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Providing skills that would help solve problems in real life
Short Course Content	Planning of a statistical research, How to manage a research project and model design

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	KURTULUŞ, K., (2004). Pazarlama Araştırmaları, Literatür yayıncılık
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Veysel YILMAZ			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL PACKAGE PROGRAMS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Determining of an application according to the technique, collecting of data and data analysis.
Short Course Content	Data collecting, reaserching and understanding of the appropriate statistical software (minitab, SPSS, Statistica, SAS etc.) analysis of the data in the choosen software.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Text Book For Package Programs
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Özer ÖZAYDIN			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
METHODS FOR ANALYZING STATISTICAL DATA II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Students will gain a statistical data analysis practice for the real data set.
Short Course Content	Robust parameter estimation, Nonparametric parameter estimation, Least-Absolute-Deviations Regression, M-Regression, Nonparametric regression, Other regression methods, Robust experimental design, Nonparametric experimental design, Comparing robust and nonparametric methods.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Understanding Robust and Exploratory Data Analysis by David C. Hoaglin, Frederich Mosteller, John W. Tukey, John Wiley & Sons, 1983.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Robust parameter estimation
2	Nonparametric parameter estimation
3	Nonparametric parameter estimation
4	Least-Absolute-Deviations Regression
5	Least-Absolute-Deviations Regression
6	M-Regression
7	M-Regression
8	Mid-Term Exam
9	Nonparametric regression
10	Nonparametric regression
11	Other regression methods
12	Other regression methods
13	Robust experimental design
14	Nonparametric experimental design
15	Comparing robust and nonparametric methods
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	All academic staff			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FINANCIAL MARKET ANALYSIS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Introduction to risk types in financial markets, examination of measurement techniques of these risks and their integration with the R/Matlab programming language.
Short Course Content	Introduction to the characteristics of financial markets and data sets, introduction to the types of risks in financial markets, techniques used to measure risks in markets, examination of Value at Risk, Expected Loss, Conditional Value at Risk and Extreme Values Method and their application in the R/Matlab programming language.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Danielsson, J., *Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk with Implementation in R and Matlab,* Wiley,2011
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MULTIVARIATE REPEATED MEASURES DESIGNS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To define the selected research problem correctly, to produce the solutions by doing the relevant literatüre reviews, to scientifically test the results obtained and to evaluate the test results.
Short Course Content	Determine of research problem, review the literatüre on the topic, Making research plan, preparation of research plan, determination of data related to research problem, selection of one of the sampling or integer techniques, analysis and application of the selected technique.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Experiment Design: Procedures for the Behavioral Sciences (Kırk)
Supporting References	B.J. Winer, Statistical Principles in Experimental Design
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Zeki YILDIZ			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
RELIABILITY ANALYSIS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main objective of the course is presenting knowledge about performance, cost and reliability. Also introducing quality and safety concepts.
Short Course Content	Studies principles of the methods of risk assessment and reliability analysis including fault trees, decision trees, and reliability block diagrams. Discusses classical, Bayesian, and median rank methods for analysis of components and systems reliability

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	E. E. Lewis, Introduction to Reliability Engineering, John Wiley & Sons, 1994
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç AKSOY			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
QUALITATIVE DEPENDENT VARIABLES MODELS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to introduce qualitative dependent variable models and explores the mathematical structure of these methods.
Short Course Content	Data structure used in qualitative dependent variable models, random utility theory, latent variable theory, linear probability model, Probit model, Logit model and assumptions of these models, estimation of the model parameters, comparison of these models, goodness of fit tests

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Aldrich J.H. and Nelson F.D.(1984). Linear Probability, Logit and Probit Models, Sage Publications Inc.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Özlem ALPU			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ADVANCED DEMOGRAPHIC TECHNIQUES II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to enable students acquire indirect techniques of estimating demographic measures
Short Course Content	To introduce “modelling” concept to student and to learn about the use of demographic models.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Newell C., 1988, Methods and models in Demograph, Belhaven Press, London
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Prof. Dr. Hatice ŞAMKAR			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MAIN ECONOMIC INDICATORS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Teaching definition and concepts about basic economic indicators with details.
Short Course Content	Importance of the basic economic indicators and basic definitions and concepts about them: Indexes Calculated in Turkiye (CPI, PPI, etc.), definition of inflation and calculating methods, Exchange rates and factors that determine Exchange rates, interest rates, Money and fiscal policies that applied in Turkiye, GNP and GDP concepts

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Çepni, Elif (2005). Ekonomik Göstergeler ve İstatistikler Rehberi, Seçkin Yayıncılık.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Gaye KARPAT ÇATALBAŞ			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FORECASTING TECHNIQUES II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	The main of the course is to introduce “forecasting techniqeus and concepts” to student and to learn about the use of the forecasting models
Short Course Content	Introduction to the forecasting techniques: Trend Analysis, Moving Averages, Ouantitative and Qualitative Forecasting Techniques, Errors of forecasting, Methods of Smoothing: Simple Smoothing Methods and Holt-Winters exponantial smoothing methods, decomposition methods, seasonal decomposition and seasonal smoothing methods

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Chatfield, C.,(2001), Time Series Forecasting, Boca Raton : Chapman & Hall/CRC
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Fatih ÇEMREK			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL ANALYSIS WITH SOFTWARES II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To teach the students how to perform statistical analyzes in computer environment.
Short Course Content	In a comprehensive investigation of the statistical analysis technique and then its application in proper statistical software or programing language.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Özdamar, K., Paket Programlar ile İstatistiksel veri Analizi I and II, 5. Basım, Kaan Kitabevi, ESKİŞEHİR, 2004.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Hülya ŞEN			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
KNOWLEDGE DISCOVERY II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Implementing a research project will be equipped with research development skils.
Short Course Content	Knowledge discovery in databases, basic concepts of data mining, machine learning, literature review, software implementations (R, Matlab, Weka, LISp-Miner and Enterprise Miner)

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Data Mining: Concepts and Techniques. J. Han and M. Kamber. Morgan Kaufmann, 2000.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Determination of the issue of homework
2	Preparation studies
3	The application studies
4	Collecting of theoretical infornation
5	Study of of theoretical infornation
6	Finding application data
7	Collecting of application data
8	Mid-Term Exam
9	Statistical evaluation of data
10	Preparation of report
11	Evaluation of the application portion of the assignment
12	Writing the assignment
13	Discussion of the conclusions
14	Presentation of assignment, discussion
15	General evaluation, statistical evaluation of the benefit application
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Sevgi ABDALLA			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
ROBUST STATISTICAL TECHNIQUES II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	To teach how to check model assumptions before starting data analysis and to use alternative methods to analyze data that does not have a normal distribution.
Short Course Content	Robust parameter estimation, Nonparametric parameter estimation, Least-Absolute-Deviations Regression, M-Regression, Nonparametric regression, Other regression methods, Robust experimental design, Nonparametric experimental design, Comparing robust and nonparametric methods.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Understanding Robust and Exploratory Data Analysis by David C. Hoaglin, Frederich Mosteller, John W. Tukey, John Wiley & Sons, 1983.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Robust parameter estimation
2	Nonparametric parameter estimation
3	Nonparametric parameter estimation
4	Least-Absolute-Deviations Regression
5	Least-Absolute-Deviations Regression
6	M-Regression
7	M-Regression
8	Mid-Term Exam
9	Nonparametric regression
10	Nonparametric regression
11	Other regression methods
12	Other regression methods
13	Robust experimental design
14	Nonparametric experimental design
15	Comparing robust and nonparametric methods
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Doç. Dr. Y. Murat BULUT			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
MARKOV CHAIN APPLICATIONS II	821418XXX

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	2	2	3	6

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Students will gain a statistical data analysis practice for the real data set.
Short Course Content	Robust parameter estimation, Nonparametric parameter estimation, Least-Absolute-Deviations Regression, M-Regression, Nonparametric regression, Other regression methods, Robust experimental design, Nonparametric experimental design, Comparing robust and nonparametric methods.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,12,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,12,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,12,13	A,K
5	To have knowledge about the concept of statistics and application of statistics.	1,4,6,7,11	1,2,6,10,12,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Understanding Robust and Exploratory Data Analysis by David C. Hoaglin, Frederich Mosteller, John W. Tukey, John Wiley & Sons, 1983.
Supporting References	Robust Regression And Outlier Detection, by Peter J. Rousseeuw, Annick M. Leroy, John Wiley & Sons, 1987. Robust Statistics, by P. J. Huber, John Wiley & Sons, 1981.
Necessary Course Material	Computer

Course Schedule	
1	Robust parameter estimation
2	Nonparametric parameter estimation
3	Nonparametric parameter estimation
4	Least-Absolute-Deviations Regression
5	Least-Absolute-Deviations Regression
6	M-Regression
7	M-Regression
8	Mid-Term Exam
9	Nonparametric regression
10	Nonparametric regression
11	Other regression methods
12	Other regression methods
13	Robust experimental design
14	Nonparametric experimental design
15	Comparing robust and nonparametric methods
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	1	36	36
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**172**
		Total workload / 30	**5,73**
		Course ECTS Credit	**6**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	30
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	40
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Barış ERGÜL			
Signature(s)				

Date:06.06.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
CATEGORICAL DATA ANALYSIS	821418003

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Students will have the knowledge and skills to analyze and evaluate categorical data.
Short Course Content	Identification and classification of categorical variables, intermittent variables, contingency tables, evaluation of two-dimensional contingency tables, homogeneity in I * J dimensional contingency tables, correlation and fit tests, analysis of over-varying contingency tables, logarithmic linear models, compliance goodness tests; Lojit and Probit Modeller; Logistic Regression Analysis.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of categorical data.	1,4,6,7,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Agresti, A. (1990). Categorical Data Analysis, John Wiley&Sons.
Supporting References	Wrigley, N. (2002). Categorical Data Analysis for Geographers and Environmental Scientists, The Blackburn Press.
Necessary Course Material	Computer

Course Schedule	
1	Identification and classification of categorical variables
2	Intermittent variables, contingency tables
3	Evaluation of two-dimensional contingency tables
4	I * J-dimensional contingency tables
5	Homogeneity, correlation and consistency tests in I * J dimensional contingency tables
6	Analysis of excessively variable contingency tables
7	Logarithmic linear models
8	Mid-Term Exam
9	Compliance Goodness Tests
10	Computer Application
11	Logit Models
12	Logit model application
13	Probit Models
14	Probit Model application
15	Various applications
16,17	Final Exam

Calculation of Course Workload

Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	0
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**136**
		Total workload / 30	**4,5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	4
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Barış ERGÜL	Prof. Dr. Veysel YILMAZ		
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
SERVICE SYSTEMS	821418004

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	The objective of this course is to familiarize students with service organizations and their characteristics.
Short Course Content	Discusses the role of services in an economy, managing services for competitive advantage, structuring the service enterprise, managing service operations, service productivity, quality and growth, and concerns quantitative models with service operations.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Gain knowledge of server types and service policies.	1,2,4,5,11	1	A, D
2	Understand queuing models	1,2,4,5,11	1	A, D
3	Gain knowledge of managing service interruptions	1,2,3,6,7,9,10	1	A, D, J
4	Gain knowledge of capacity planning problem in queuing systems.	1,2,3,6,7,9,10	1	A, D, J
5				
6				
7				
8				

*Teaching Methods **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

Measuring Methods **A:Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	C.Haksever, B.Render, R.S. Russell and R.G. Murdick, Service Management and Operations (Printice Hall, Uppersaddle River, NJ, 2000
Supporting References	J.A.Fitzsimmous, M.J. Fitzsimmons, Service Management Operations, Strategy and Informatiuon Technology, International Edition; 2001
Necessary Course Material	Books, articles, computers

Course Schedule	
1	Introduction to Service Systems
2	Types of Servers and Serving Policies
3	Queueing Models
4	Queueing Models
5	Queueing Models
6	Queueing Models
7	Server Unavailability
8	Mid-Term Exam
9	Server Unavailability
10	Capacity Planning and Queueing Models
11	Capacity Planning and Queueing Models
12	Managing Capacity and Demand
13	Managing Capacity and Demand
14	Performance Measure- Service Level
15	Performance Measure- Service Level
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	14	1	14
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)	1	5	5
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	25	25
		Total workload	138
		Total workload / 30	4,6
		Course ECTS Credit	5

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	3
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them	2
10	The ability to use statistical methods for the knowledge of quality process and management	3
11	The ability to use statistical methods to develop his profession and applied statistical techniques	3
12		

LECTUTER(S)				
Prepared by	Prof. Dr. H. Kıvanç Aksoy			
Signature(s)				

Date:05.07.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
FINANCIAL ECONOMICS	821418005

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Defining concepts related to financial system and function
Short Course Content	Definition of the financial system and its function, definition of financial instruments and intermediaries and their functions, definition of the exchange rates and theory of interest

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Having knowledge about the functioning of financial markets	1,2,5,6,7	1,5,6,11,12	A
2	Having knowledge about financial market terms	1,2,5,6,7	1,5,6,11,12	A
3	Having knowledge about the functioning of money markets	1,2,5,6,7	1,5,6,11,12	A
4	Having knowledge about the functioning of capital markets	1,2,5,6,7	1,5,6,11,12	A
5	Having knowledge about the use of financial instruments	1,2,5,6,7	1,5,6,11,12	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	Mishkin F. S. **"***The Economics of Money, banking ad financial markets***"** Addison Wesley: NewYork, 2009
Supporting References	Parasız İ."*Para Banka ve Finansal Piyasalar"*.Ezgi Kitapevi,2003 Keyder N. " *Para teori-politika-uygulama*", Bizim Hür Basım evi, 2002
Necessary Course Material	

Course Schedule	
1	Financial System and functioning
2	Financial System and functioning
3	Financial System and functioning
4	Financial instruments
5	Financial instruments
6	Financial instruments
7	Financial intermediation and regulation
8	Mid-Term Exam
9	Financial intermediation and regulation
10	Financial intermediation and regulation
11	Determination of interest and interest rates
12	Determination of interest and interest rates
13	Foreign exchange markets
14	Foreign exchange markets
15	Risk management of exchange rate
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	4	8	32
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	36	36
Final Exam	1	2	2
Studying for Final Exam	1	36	36
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	50
Quiz	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	2
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	4
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:05.07.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL TECHNIQUES FOR MARKETING RESEARCH II	821418006

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Determining which techniques will be used to analyse the data collected during marketing research and preparing and reporting/presenting a project using several multivariate statistical techniques to analyse the data
Short Course Content	Analysis objectives, relationships between techniques, analysis of variance, multiple regression analysis, discriminant analysis, factor analysis, cluster analysis, fit analysis, multidimensional scaling, nonparametric techniques

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Gains the ability to define problems, data collection, modelling and analysis with appropriate statistical techniques.	3,7,11	1,5,6,7,15	A,C,F
2	Gains the ability to analyse and interpret data with current computer software and to use them in statistical decision-making processes.	3,7,11	1,5,6,7,15	A,C,F
3	Gains the ability to conduct research individually and as a team member in applications in statistics and other fields.	3,7,11	1,5,6,7,15	A,C,F
4	Gains the ability to use algorithms for problem solving.	3,7,11	1,5,6,7,15	A,C,F
5	Gains the ability to use theoretical and practical knowledge in the field of statistics.	3,7,11	1,5,6,7,15	A,C,F
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	1. Instructor's lecture note book, 2.KURTULUŞ, K., (2004). Marketing Research, Literature Publishing 3.NAKİP, M. (2006) Marketing Research Techniques and SPSS supported applications, Seçkin Publishing House, Ankara
Supporting References	1. KOTLER, P., (1991). Marketing Management Analysis, Implementation and Control, Prentice – Hall Internation Inc. 2.ODABAŞI, Y., (1998). Tüketici Davranışı ve Pazarlama Stratejisi, Anadolu Üniversitesi 3.SHARMA, S. ,(1993). Applied Multivariate Techniques, John Wiley and Sons Inc, New York. 4.TABANICK, G.B. FIDELL, L.S., (1996). Using Multivariate Statistics, Harper Collngs College Publisher Inc., New York.
Necessary Course Material	Computer

Course Schedule	
1	Purposes of statistical analysis
2	Relationships between statistical techniques
3	Relationships between statistical techniques
4	Analysis of variance and ready software applications
5	Multiple regression analysis and ready-made software applications
6	Separation analysis and ready software applications
7	Factor analysis and ready-made software applications
8	Midterm Exams
9	Factor analysis, Cluster analysis and statistical software applications
10	Cluster analysis and statistical software applications
11	Multidimensional scaling and statistical software applications
12	tatistical software applications
13	Nonparametric tests and statistical software applications
14	Nonparametric tests and statistical software applications
15	Statistical software applications
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	2	2	4
Homework	1	30	40
Quiz Exam			
Studying for Quiz Exam	1		
Oral exam	1	2	2
Studying for Oral Exam	1	10	10
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)	2	10	20
Presentation (Preparation time included)	2	10	20
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	1	1
Final Exam	1	10	10
Studying for Final Exam	14	3	42
		Total workload	**151**
		Total workload / 30	**5,03**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	2
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	2
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	5
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	5
12		

LECTUTER(S)				
Prepared by	Prof.Dr.Veysel YILMAZ			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL COMPUTING II	821418007

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	No Prerequisites
Objectives of the Course	Hypothesis testing, categorical data analysis, regression and correlation analysis,analysis of variance to be addressed.
Short Course Content	Hypothesis testing, error types, categorical data analysis, regression and correlationanalysis of variance.

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	To ensure that students learn and use the basic concepts in their field	1,4,6,7,11	1,2,6,10,13	A,K
2	Having sufficient knowledge in statistics subjects	1,4,6,7,11	1,2,6,10,13	A,K
3	Solving the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
4	Modeling the problems encountered using theoretical and applied knowledge	1,4,6,7,11	1,2,6,10,13	A,K
5	To have knowledge about the concept of statistics.	1,4,6,7,11	1,2,6,10,13	A,K
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Olasılık ve İstatistiğe Giriş Prof. Dr. Salih Çelebioğlu – Prof.Dr. Reşat Kasap
Supporting References	Olasılık ve İstatistik Prof.Dr. Fikri Akdeniz, Olasılık ve İstatistik Prof.Dr. Semra Erbaş
Necessary Course Material	Calculater

Course Schedule	
1	Types of error in hypothesis testing, tests of hypotheses about the mean mass
2	For large samples and small bulk samples averaging hypothesis testing
3	The mean difference of two clusters of hypothesis testing, the dependent and independent tests of hypotheses about large samples, averaged for the stack, the stack for small samples independent tests of hypotheses about the mean difference
4	Mass ratio and rate difference of the two stack tests of hypotheses about
5	Goodness of fit tests: binomial distribution of the compliance, compliance with the Poisson distribution, normal distribution fit
6	Independence test, homogeneity test, measuring the relationship
7	Simple linear regression, least squares method
8	Mid-Term Exam
9	Assumptions of regression analysis, the standard deviation of random errors
10	The coefficient of determination, confidence intervals and hypothesis testing
11	F test for the significance of the model, the use of regression models and correlation
12	One-way analysis of variance, the model equation, the calculation formulas
13	Bartlett's test for equality of variances
14	Multiple comparisons, Tukey test , Two-way analysis of variance
15	Model equation and calculation formulas, Random block design, Latin square layout
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	15	4	60
Classroom Studying Time (review, reinforcing, prestudy,….)	15	2	30
Homework	0	0	0
Quiz Exam	0	0	0
Studying for Quiz Exam	0	0	0
Oral exam	0	0	0
Studying for Oral Exam	0	0	0
Report (Preparation and presentation time included)	0	0	
Project (Preparation and presentation time included)	0	0	0
Presentation (Preparation time included)	0	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	30	30
Final Exam	1	2	2
Studying for Final Exam	1	12	12
		Total workload	**136**
		Total workload / 30	**4,5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	0
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	2
4	The ability to use suitable algorithms in order to solve the problem of interest	2
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	5
7	The awareness of professional ethics	4
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	2
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Hülya ŞEN			
Signature(s)				

Date:06.06.2024

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ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INSURANCE STATISTICS AND ACTUARY	821418008

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				X

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	General concepts related to insurance and actuarial risk measurement and premium calculations
Short Course Content	Concepts and types of insurance, statistical distributions used in insurance, types of index used in insurance premium calculations

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Having knowledge about the basic concepts of insurance and actuarial	1,2,5,6,7	1,5,6,11,12	A
2	Having knowledge about the statistical models used in insurance	1,2,5,6,7	1,5,6,11,12	A
3	Having knowledge about risk models used in insurance	1,2,5,6,7	1,5,6,11,12	A
4	Having knowledge about premium calculations in insurance	1,2,5,6,7	1,5,6,11,12	A
5	Having knowledge about risk management in insurance	1,2,5,6,7	1,5,6,11,12	A

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Boland, P. J. "*Statistical and Probabilistic Methods in Actuarial Science*", Chapman & Hall/CRC Interdisciplinary Statistics, 2007
Supporting References	Bowers N.L., Gerber H.V., Hickman J.C., Jones D.A. and Nesbitt C.J. "*Actuarial Mathematics*", SOA, USA, 1997
Necessary Course Material	

Course Schedule	
1	Definition of insurance
2	Types of insurance
3	Terms of insurance
4	Statistical distributions
5	Statistical distributions
6	Calculations of insurance Premium
7	Calculations of insurance Premium
8	Mid-Term Exam
9	Calculations of insurance damage
10	Calculations of insurance damage
11	Methods of calculating total damage distribution
12	Methods of calculating total damage distribution
13	Methods of calculating total damage distribution
14	Types of Index
15	Types of Index
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	4	8	32
Homework			
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	36	36
Final Exam	1	2	2
Studying for Final Exam	1	36	36
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	50
Quiz	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	4
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	3
4	The ability to use suitable algorithms in order to solve the problem of interest	3
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	5
8	The ability or motivation to use statistical concepts and understand it in English	3
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	3
10	The ability to use statistical methods for the knowledge of quality process and management	2
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2

LECTUTER(S)				
Prepared by	Assoc. Prof. Dr. Serdar NESLİHANOĞLU			
Signature(s)				

Date:05.07.2024

T.C.

ESKİSEHİR OSMANGAZİ UNIVERSITY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL ANALYSIS USING MATLAB II	821418010

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	The aim of this course is to provide students with performing statistical analysis using MATLAB software program.
Short Course Content	Regression analysis using MATLAB program, least squares and robust estimators, iterative solution methods, outlier detection in multivariate data, principal component analysis, cluster analysis, discriminant analysis, logistic regression analysis and robust alternatives.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Students perform advanced statistical analysis using MATLAB program.	1,2,3,4	1,6	K
2	Students know how to apply robust estimation methods with the help of MATLAB program.	1,2,3,4	1,6	A,D
3	Students obtain iterative solutions that cannot be done with a calculator.	1,2,3,4	1,11	A,D
4	Students learn outlier detection methods in multivariate data using MATLAB program.	1,2,3,4	1,6,12	A,D
5	Students perform multivariate statistical analyzes with the help of MATLAB program.	1,2,3,4	1,2,6	A,D

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Computational Statistics Handbook with Matlab, Wendy L. Martinez, Angel R. Martinez Chapman & Hall/CRC.
Supporting References	
Necessary Course Material	Computer

Course Schedule	
1	Linear regression models
2	Least squares estimators
3	Robust estimators in linear regression
4	Iterative solution procedures
5	Outlier detection in multivariate data
6	Outlier detection in multivariate data
7	Outlier detection in multivariate data
8	Mid-term exam
9	Principal components analysis
10	Robust principal components analysis
11	Cluster analysis
12	Discriminant analysis
13	Robust discriminant analysis
14	Applications in Matlab prograLogistic regression analysism
15	Robust logistic regression analysis
16,17	Final exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	14	3.5	49
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	20	20
Final Exam	1	1	1
Studying for Final Exam	1	23	23
		Total workload	**150**
		Total workload / 30	**5**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Homework	5
Final Exam	55
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	4
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	5
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	4
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	3
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Arzu ALTIN YAVUZ			
Signature(s)				

Date:04.07.2024

T.C.

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICAL ANALYSIS USING R II	821418009

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	none
Objectives of the Course	This course includes the analysis and interpretation of statistical techniques practically in the R program.
Short Course Content	Univariate, bivariate and multivariate data, random generators, exploratory data analysis, normality tests, confidence interval estimation, hypothesis tests, anova and ancova, regression analysis, transformations, variable selection.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Learns to obtain graphical representations used in statistics with R	1,3,4	1,6,11	A,D
2	Learns how to perform statistical analyzes	3,4	1,6,11	A,D
3	Can use R packages developed for the solution of statistical problems.	3,4	1,6,11	A,D
4	Gains the knowledge to make statistical applications with R	1,2,3,4	1,6,11	A,D
5	Gains the ability to make statistical applications with R	1,3,4,11	1,6,11	A,D
6				
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Verzani J, 2001, Using R for Introductory Statistics, Chapman & Hall
Supporting References	Crawley., M. J., 2007,The R Book, Wiley
Necessary Course Material	Computer

Course Schedule	
1	Univariate and bivariate data
2	Multivariate data
3	Random data and random number generators
4	Exploratory data analysis
5	Normality tests
6	Transformations
7	Estimation theory
8	Mid-Term Exam
9	Estimation theory
10	Confidence interval estimation
11	Hypothesis testing
12	Hypothesis testing
13	Analysis of variance and analysis of covariance
14	Regression analysis
15	Variable selection
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	2	14	28
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	20	20
		Total workload	**156**
		Total workload / 30	**5,2**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	60
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to use both theoretical and applied knowledge in statistics	3
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	3
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	4
4	The ability to use suitable algorithms in order to solve the problem of interest	4
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	1
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	1
7	The awareness of professional ethics	1
8	The ability or motivation to use statistical concepts and understand it in English	2
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	2
12		

LECTUTER(S)				
Prepared by	Prof.Dr. Özlem ALPU			
Signature(s)				

Date:06.06.2024

ESKİŞEHİR OSMANGAZİ UNİVERSİTY

FACULTY OF SCIENCES

STATISTICS DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
INTRODUCTION TO DATA MINING	821418011

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	3	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
X	X			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	None
Objectives of the Course	
Short Course Content	Data Mining and Knowledge Discovery, Data Preprocessing, Exploratory Data Analysis, Prediction and Classificat

Learning Outcomes of the Course		Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Describe and define basic concepts in data mining	1, 2	1, 5, 8	A, C
2	Discuss prominent algorithms in data analytics (e.g., K-means clustering, association rule mining).	2, 6	1, 3, 8, 11	A, C, D
3	Explain the process of inferring knowledge and insights from heterogeneous data sources.	2	6, 8, 11	A, E
4	Use data analytics tools with graphical user interface (e.g., Weka and Orange Data Mining)	2, 3, 6	1, 8, 10, 14	D, I, J
5	Perform basic data analytics tasks such as clustering, association rule mining, classification, visualization	2, 3, 6	1, 8, 10, 14	D, I, J
6	Conduct a problem-solving task and use appropriate tools and algorithms to solve the problem.	4	3, 4, 8, 10, 14	D, G, J
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7**:Observation, **8**:Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12**:Team/Group Work, **13**:Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K**:Class Attendance; **L**:Jury Exam

Main Textbook	Daniel T. Larose, Discovering Knowledge in Data: An Introduction to Data Mining, John Wiley & Sons, Inc. 2005.
Supporting References	1. Han, J., Kamber, M, and Pei, J. (2012) Data Mining: Concepts and Techniques, 3rd Edition. San Francisco, CA: Morgan Kaufmann. ISBN-10: 0123814790 2. Downey, A.B. (2015) Think Python: How to Think Like a Computer Scientist, Second Edition. O'Reilly Media. ISBN-10: 1491939362 3. Data Mining and Business Analytics with R, Johannes Ledolter
Necessary Course Material	Book, article, software, computer, R and Python software, projection etc.

Course Schedule	
1	Introduction to Data Mining: Basic Concepts
2	Data Preprocessing: Collecting and cleaning data
3	Data Warehousing & OLAP (Part A – data warehousing & beyond)
4	Data Warehousing & OLAP (Part B- data cubes & wrap)
5	Exploratory Data Analysis
6	Predictive analysis & classification (Part A)
7	Classification Techniques and Algorithms (Part B – Software Implementation)
8	Mid-Term Exam
9	Classification Techniques and Algorithms (Part B – Software Implementation)
10	Association rule mining- Python Implementation
11	Clustering – (Part A)
12	Clustering – (Part B – Software Implementation)
13	Applications of Data Analytics to Real World Problems
14	Model Evaluation and Comparative Studies
15	Trends in Big Data
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	2	28
Homework	3	8	24
Quiz Exam			
Studying for Quiz Exam	2	3	6
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)	2	15	30
Presentation (Preparation time included)			
Mid-Term Exam	1	1	1
Studying for Mid-Term Exam	1	10	10
Final Exam	1	2	2
Studying for Final Exam	1	10	10
		Total workload	**153**
		Total workload / 30	**5,1**
		Course ECTS Credit	**5**

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	
Homework	15
Class Attendance	10
Bir öğe seçin.	
Final Exam	45
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	The ability to use both theoretical and applied knowledge in statistics	5
2	The ability to define the problem, collecting data, modelling and analyzing with appropriate statistical methods	5
3	The ability to analyze data with the help of up-to-date software, interpret the results and use them in statistical decision making process	5
4	The ability to use suitable algorithms in order to solve the problem of interest	5
5	The ability to conduct research as part of a team and on his/her own in statistics and other areas	3
6	The ability to use fundamental concepts and principles in probability, statistics and mathematics	4
7	The awareness of professional ethics	2
8	The ability or motivation to use statistical concepts and understand it in English	1
9	The ability to interpret the fundamental concepts of social sciences and humanities analyze them.	1
10	The ability to use statistical methods for the knowledge of quality process and management	1
11	The ability to use statistical methods to develop his profession and applied statistical techniques.	3
12		

LECTUTER(S)				
Prepared by	Dr. Öğr. Üy. Sevgi Abdalla			
Signature(s)				

Date:06.06.2024