

1. GENERAL DESCRIPTION					
Course Code	Course Title	Type of Course	Year of Study	Semester	ECTS Credits
ISL5004	Applied Regression Analysis	Elective	First Year	Spring Semester	6
2. LEVEL OF THE COURSE					
Second Cycle (Graduate)					
3. OBJECTIVE OF THE COURSE					
The aim of this course is to teach students all the routines of multiple regression and correlation analysis in details.					
4. NAME OF LECTURER(S)					
Assoc. Prof. Dr. Ali Sait ALBAYRAK					
5. LEARNING OUTCOMES					
LO1	Knows the basic concepts and technical details of regression analysis.				
LO2	Interpret regression analysis results.				
LO3	Use regression analysis to develop policy and make forecasting.				
LO4	Investigate and implement suitable alternative solutions by choosing appropriate alternative regression techniques in the case of deviations from the assumptions of OLS.				
LO5	Identify and interpret to the functional structure of the regression models.				
LO6	Calculate and interpret the parametric and nonparametric correlation coefficients between random variables.				
6. MODEL OF DELIVERY					
Face to face					
7. PREREQUISITES AND CO-REQUISITES					
None					
8. RECOMMENDED OPTIONAL PROGRAM COMPONENTS					
None					
9. COURSE CONTENTS					
Simple Linear Regression Analysis, Multiple Linear Regression Analysis, The Assumptions of Least Squares Technique, Deviations from the Assumptions and Solutions, Functional Structure in Regression Analysis and Suitable Model Selection, Using Dummy Variable in Regression Analysis, The Problem of Heteroscedasticity and Weighted Regression Analysis, The Problem of Autocorrelation and Autoregression Methods, The Problem of Multicollinearity and Alternative Regression Techniques, Parametric and Nonparametric Correlation Analysis.					
10. WEEKLY DETAILED COURSE CONTENTS					
Week	Theoretical				
1	Simple Linear Regression Analysis: Basic Concepts and Technical Details.				
2	Analyzing Simple Linear Regression Model with Least Squares Techniques and Interpreting Regression Results.				
3	Multiple Linear Regression Analysis: Basic Concepts and Technical Details.				
4	Analyzing Multiple Linear Regression Model with Least Squares Techniques and Interpreting Regression Results.				
5	Testing the Significance of Partial Regression Coefficients ( $t$ -Tests) and Testing the Overall Significance of the Sample Regression Model ( $F$ -Test).				
6	Computing and Interpreting of Multiple Correlation Coefficient, Adjusted Multiple Correlation Coefficient and Multiple Coefficient of Determination.				
7	Interpretation of Regression Coefficient Table, Developing Policy Using Regression Model and Forecasting with Regression Analysis.				
8	Midterm Exam				
9	The Assumptions of Least Squares Technique, Deviations from the Assumptions and Solutions.				
10	Functional Structure in Regression Analysis and Suitable Model Selection: Full Logarithmic Regression Model, Choosing The Suitable Model Between Full Logarithmic Regression Model and Full Linear Regression Model				

	with MWD Test, Semi-logarithmic Regression Model, , Hyperbolic Regression Model, Polynomial Regression Model, Selection Suitable Polynomial Regression Model with Lagrange Multiplier (LM) Test.
11	Using Dummy Variable in Regression Analysis, Creating Dummy Variables in the Cross-Sectional and Time Series, Using and Interpreting Dummy Variables in Regression Analysis and Illustrative Applications.
12	The Problem of Heteroscedasticity and Weighted Regression Analysis, The Problem of Autocorrelation and Autoregression Methods.
13	The Problem of Multicollinearity and Stepwise Regression Analysis, Ridge Regression Analysis and Principal Component Regression Analysis.
14	Parametric Correlation Analysis: Pearson Correlation Coefficient ( $r$ ), Multiple Correlation Coefficient ( $R$ ), Adjusted Multiple Correlation Coefficient, Partial Correlation Coefficients ( $r_{12.34}$ ) and Canonical Correlation Coefficient ( $C$ ).
15	Nonparametric Correlation Analysis: Fi ( $\phi$ ) Coefficient, Cramer-V Coefficient, Contingency Coefficient ( $c$ ), Spearman Correlation Coefficient ( $r^s$ ) and Eta Coefficient ( $\eta$ )
16	Final Exam

### 11. TEXTBOOK / MATERIAL / RECOMMENDED OR REQUIRED READINGS

- ✓ Mustafa Köseoğlu, Rahmi Yamak, *Uygulamalı İstatistik ve Ekonometri, Celepler Matbaacılık, Trabzon, 2012.*
- ✓ Neyran Orhunbilge, *Uygulamalı Regresyon ve Korelasyon Analizi, İstanbul Üniversitesi İşletme Fakültesi Yayın No: 281, İstanbul, 2002.*
- ✓ Albayrak, Ali Sait (2006). *Uygulamalı Çok Değişkenli İstatistik Teknikleri, Asil Yayın Dağılım, Ankara.*

### 12. PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Activities are Given in Detail in the Section of "Assessment Methods and Criteria" and "Workload Calculation".

### 13. ASSESSMENT METHODS AND CRITERIA

Type of Assessment	Weight (%)
Midterm Examination	40
Final Examination	60

### 14. LANGUAGE OF INSTRUCTION

Turkish

### 15. WORK PLACEMENT(S)

None

### 16. WORKLOAD CALCULATION

Activities	Number	Time (Hours)	Total Workload (Hours)
Lectures (Face to Face Teaching)	14	3	42
Individual Studies Outside Class	14	6	84
Individual Study for Midterm Examination	1	15	15
Midterm Examination	1	1	1
Individual Study for Final Examination	1	25	25
Final Examination	1	1	1
<b>Total Work Load (Hours)</b>	<b>32</b>	<b>51</b>	<b>168</b>

### 17. CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
LO1	4	3	4		3	5	3		2	3		2		3	
LO2	4		5		3	3	4		3	4		2		3	
LO3	4		5		3	3	4		3	4		2		3	
LO4	2	3	5			3	2			4		3			
LO5	4		5		3	3	4		3	4		2		3	
LO6	4	3	4		3	5	3		2	3		2		3	

\* Contribution Level: 1=Very Low, 2=Low, 3=Medium, 4=High and 5=Very High. LO=Learning Outcome and PO=Program Outcomes.