

OSTİM TECHNICAL UNIVERSITY
FACULTY OF ECONOMICS AND ADMINISTRATIVE SCIENCES
ECONOMICS DEPARTMENT
COURSE SYLLABUS FORM
2022-2023 SPRING

ECON 301 Introduction to Econometrics I							
Course Name	Course Code	Period	Hours	Application	Laboratory	Credit	ECTS
Introduction to Econometrics II	ECON 302	6	2	1	0	3	6

Language of Instruction	English
Course Status	Compulsory
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Question-Answer, Problem Solving
Class Time/Classroom	
Instructor	Dr. Busra Agan
Office	
E-mail	
Office Hours	
Teaching Assistants	

Course Objective
<p>This course follows on from Econometrics I and broadens the knowledge and application of econometrics. It helps develop practical skills in the use of econometric software (R, Stata, E-Views) for empirical research. Analyzing and interpreting the models based on statistical-econometric significance and econometric criteria, interpretation of the coefficients and other outputs of the models, covering a review of multicollinearity, heteroskedasticity, autocorrelation, and estimations of Qualitative Response Regression Models, Panel Data Models and Time Series Models.</p>

Learning Outcomes
<p>The students who become successful in this course will be able;</p> <ol style="list-style-type: none"> 1. to demonstrate a comprehensive knowledge of econometric analysis and inference 2. to evaluate the suitability of an econometric technique to a panel data and time-series dataset 3. to analyze and interpret the output of the models, especially, in terms of assumptions; if they do not satisfy assumptions, suggest alternative solutions 4. to assess and carry out empirical studies in economics using econometric software 5. to use R, STATA and E-Views software packages while constructing and estimating the models 6. to compare alternative models for a particular subject 7. to discuss the tests used to identify correct model specification and statistical criteria for choosing between models

Course Outline

This course aims at giving students a basic understanding of econometrics theories and applying econometric techniques of regression analysis. During this course, issues of specification, interpretation, and evaluation of econometric models will be emphasized, in the context of hands-on practical exercises with qualitative response regression, time series, and panel data estimations.

Weekly Topics and Related Preparation Studies

Weeks	Topics	Preparation Studies
1	Multicollinearity (D. Gujarati and D. Porter, Chapter: 10, Practice in R, Stata, and E-Views)	<ul style="list-style-type: none"> – The Nature of multicollinearity – Consequences of ignoring multicollinearity – Detections of multicollinearity – Remedial measures – Practices for multicollinearity
2	Heteroscedasticity (D. Gujarati and D. Porter, Chapter: 11, Practice in R, Stata, and E-Views)	<ul style="list-style-type: none"> – The Nature of Heteroscedasticity – Consequences of ignoring heteroscedasticity – Detections of Heteroscedasticity – Remedial measures – Practices for Heteroscedasticity
3	Serial-correlation (Autocorrelation) (D. Gujarati and D. Porter, Chapter: 12, Practice in R, Stata, and E-Views)	<ul style="list-style-type: none"> – The Nature of Autocorrelation – Consequences of ignoring Autocorrelation – Detections of Autocorrelation – Remedial measures – Practices for Autocorrelation
4-5	Dummy Variable Regression Models (D. Gujarati and D. Porter, Chapter: 9, Practice in R and E-Views)	<ul style="list-style-type: none"> – The Nature of Dummy Variable – ANOVA Models – ANOVA Models with Two Qualitative Variables – The Dummy Variable Alternative to the Chow Test – Interaction Effects Using Dummy Variables – The Use of Dummy Variables in Seasonal Analysis – Piecewise Linear Regression

6-7	Qualitative Response Regression Models (D. Gujarati and D. Porter, Chapter: 15, Practice in R and E-Views)	<ul style="list-style-type: none"> - The Nature of Qualitative Response Models - The Linear Probability Model (LPM) - Applications of LPM - The Logit Model - Estimation of the Logit Model - The Probit Model - The Tobit Model
8	MIDTERM EXAM	
9-10	Panel Data Regression Models (D. Gujarati and D. Porter, Chapter: 16, Practice in Stata)	<ul style="list-style-type: none"> - Why Panel Data? - Panel Data: An Illustrative Example 593 - Pooled OLS Regression or Constant Coefficients Model - The Fixed Effect Least-Squares Dummy Variable (LSDV) Model - The Random Effects Model (REM) - Properties of Various Estimators
11	Dynamic Econometric Models: Autoregressive and Distributed-Lag Models (D. Gujarati and D. Porter, Chapter: 17, Practice in Stata and E-Views)	<ul style="list-style-type: none"> - The Role of "Time," or "Lag," in Economics - Estimation of Distributed-Lag Models - Estimation of Autoregressive Models - The Method of Instrumental Variables - Autoregressive Models: Durbin h Test
12-13	Time Series Econometrics: Concepts of Unit Root and Cointegration (D. Gujarati and D. Porter, Chapter: 21, Practice in R and E-Views)	<ul style="list-style-type: none"> - Stochastic, Stationary Stochastic and Nonstationary Stochastic Processes - Trend Stationary (TS) and Difference Stationary (DS) Stochastic Processes - Tests of Stationarity - Unit Root Tests - Cointegration Tests
14	Time Series Models: ARIMA, VAR (D. Gujarati and D. Porter, Chapter: 22, Practice in R and E-Views)	<ul style="list-style-type: none"> - Approaches to Economic Forecasting - Testing for Heteroscedasticity - AR, MA, and ARIMA Modeling of Time Series Data - The Box–Jenkins (BJ) Methodology - Estimation of the ARIMA Model - Forecasting - Vector Autoregression (VAR)
15	Review Lecture	-
16	FINAL EXAM	

Textbook(s)/References/Materials:
Textbook: Damodar. N. Gujarati and Dawn C. Porter. Basic Econometrics, 5th edition, Mc Graw Hill, 2009.
Supplementary References: Wooldridge, Jeffrey M. Introductory Econometrics: A Modern Approach. 7th edition. Mason, OH: Thomson/South-Western, 2020. Kacapyr, E. Essential Econometric Techniques: A Guide to Concepts and Applications, 3rd edition, 2022.
Other Materials: R. Carter Hill & William Griffiths & Guay Lim, Principles of Econometrics, 5th edition, 2017.

Assessment		
Studies	Number	Contribution margin (%)
Attendance		
Lab		
Class participation and performance	1	10
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical		
Homework	1	15
Presentation		
Projects		
Report		
Seminar		
Midterm Exam/Midterm Jury	1	25
General Exam / Final Jury	1	50
Total		100
Success Grade Contribution of Semester Studies		50
Success Grade Contribution of End of Term		50
Total		100

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Course hours (Including the exam week): 16 x total course hours)	16	2	32
Laboratory			
Application	16	1	16
Course-Specific Internship (if any)			
Field Study			
Study Time Out of Class	16	3	48
Presentation / Seminar Preparation			
Projects			
Reports			
Homework	2	8	16
Quizzes / Studio Review			
Preparation Time for Midterm Exams / Midterm Jury	1	30	30
Preparation Period for the Final Exam / General Jury	1	30	30
Total Workload		(172/30 = 5.73)	172

Course' Contribution Level to Learning Outcomes						
Nu	Learning Outcomes	Contribution Level				
		1	2	3	4	5
L01	to demonstrate a comprehensive knowledge of econometric analysis and inference					X
L02	to evaluate the suitability of an econometric technique to a panel data and time-series dataset					X
L03	to analyze and interpret the output of the models, especially, in terms of assumptions; if they do not satisfy assumptions, suggest alternative solutions					X
L04	to assess and carry out empirical studies in economics using econometric software					X
L05	to use R, STATA and E-Views software packages while constructing and estimating the models					X
L06	to compare alternative models for a particular subject					X
L07	to discuss the tests used to identify correct model specification and statistical criteria for choosing between models					X

Relationship Between Course Learning Outcomes and Program Competencies (Department of Economics)										
Nu	Program Competencies	Learning Outcomes							Total Effect (1-5)	
		L01	L02	L03	L04	L05	L06	L07		
1	Know the basic concepts used in economics, the relations between concepts, economic theories, the functioning mechanisms of the economy and the development processes of economies over time.	x								1
2	Know how to obtain economic data and the research methods for processing and evaluating the obtained data by using various computer programs when necessary.			x			x			4
3	Follow current developments in national and international macroeconomic conjuncture and world economic relations and can suggest economic policies to be used in case of economic problems.									
4	Acquire the capacity to conduct individual research on the field, interpret the results, and compare them with theoretical propositions.							x		1
5	Scrutinize and interpret all kinds of knowledge in the field of economics, including theoretical and statistical information, through analysis within the			x						4

	framework of cause-effect relationships.								
6	Present solutions and opinions about the problems analyzed by supporting them with qualitative and quantitative data, use an analytical language, and support the used approach with visual and graphical materials.				x				4
7	Gain advanced skills in software and programming languages that assist analysis in the econometric field and can adapt to new software and programming languages					x			4
8	Support the acquired theoretical knowledge of economics with econometric and statistical calculations, analyze and evaluate phenomenon using software and programming languages within the framework of analytical thinking.			x					4
9	Develop the ability to analyze unexpected and complex problems to be encountered during professional practice, can take responsibility as an individual or team member for solving the problem, and take initiative when necessary.								
10	Develop critical thinking and produce solutions on policy issues by adapting the theoretical and analytical knowledge to different conceptual frameworks.								
11	Exhibit approaches that will adapt to the speed of globalization, innovations and technological developments.								
12	Having an entrepreneurial spirit, develop original and innovative ideas, solution proposals and assume responsibility.								
13	Pay maximum attention to social responsibilities, ethical sensitivities and legal framework in theoretical and practical studies.								
14	Communicate with peers, colleagues, co-workers, employees and managers with common sense, empathy and situational awareness.								
15	Communicate effectively with colleagues, senior managers and the market, both in mother tongue and in at least one foreign language (English).								
Total Effect									22

Policies and Procedures
Web page:
<p>Exams: The exams aim at assessing various dimensions of learning: knowledge of concepts and theories and the ability to apply this knowledge to real world phenomenon, through analyzing the situation, distinguishing problems and by suggesting solutions.</p> <p>The written exams can be of two types, i.e., open-ended questions, which can also be in the form of problems or multiple-choice questions.</p> <p>Exams are composed of a final exam comprising 50% of the student's grade and a 25 % mid-term exam, with less weight. The rest of the grade comes from other assessment methods, shown in the assessment table included in this syllabus.</p> <p>The Department of Economics does not tolerate any act of academic dishonesty. Examinations are individual and must be completed without any outside assistance. Students who attempt to cheat during exams will receive a failing grade from that exam. The case could also be carried to the Dean's Office for additional disciplinary action.</p>
<p>Assignments: The assignments could be in the form of homeworks or paper writing. Scientific Research Ethic Rules are very important while preparing assignments. The students should be careful about citing any material used from outside sources and reference them appropriately. The students must not adopt "cut-copy-paste" behavior from the sources in the internet or use the contents of any type of previous work in their assignments. Plagiarism is unethical behavior and is subject to disciplinary action.</p>
<p>Missed exams: Any student missing an exam needs to bring an official medical report to be able to take a make-up exam.</p>
<p>Projects: The projects (if are a part of the course requirements) could be performed either individually or in groups, without engaging in plagiarism.</p>
<p>Attendance: Attendance requirements are announced at the beginning of the term. Students are usually expected to attend at least 70% of the classes during each term.</p>
<p>Objections: If the student observes a material error in his/her grade, he/she has the right to place an objection to the Faculty or the Department. The claim is examined and the student is notified about its outcome.</p>