İZMİR UNIVERSITY OF ECONOMICS

Graduate School
Financial Economics (With Thesis)
ECON 533 - Econometrics and Quantitative Methods

COURSE INTRODUCTION AND APPLICATION INFORMATION

Course Name	Econometrics and Quantitative Methods

Code	Semester	Theory (hour/week)	Application/Laboratory (hour/week)	Local Credits	ECTS
ECON 533	Fall/Spring	3	0	3	7.5

Prerequisites	None
Course Language	English
Course Type	Service Course
Course Level	Second Cycle
Mode of Delivery	-
Teaching Methods and Techniques	-
Course Coordinator	-
Course Lecturer(s)	* Yrd. Doç. Dr. Gül ERTAN ÖZGÜZER
Course Assistants	-

Course Objectives	The main goal is to give the quantitative skills necessary to understand finance and economics through the master level. The focus of the course is explaining to use mathematical tools efficiently and accurately in the solution of economic and financial problems. The course also equips the students with the techniques like regression to make economic forecasts. To discuss several optimization problems encountered in financial and economic models, and to explain how to solve such problems using recent advances in methods are the other two objectives.
Course Learning Outcomes	The students who succeeded in this course; * will be able to use mathematical tools efficiently and accurately in the solution of economic and financial problems.

	* will be able to work with the solutions of optimization problems in economic models * will be able to use differential calculus to understand demand theory, production theory and output decision of the firm * will be able to use the techniques like regression to make economic forecasts.
Course Description	The course starts with single variable calculus and single variable optimization. It focuses on their applications to demand theory, production theory, and output decision of the firm. Then it moves on to explaining the multivariable calculus and optimization with an emphasis on economic and financial applications. The course illustrates how all these methods and tools are useful in various applications, drawing on many economic and financial markets examples. The last part of the course gives attention to simple regression and multiple regression analysis.

Course Category	Core Courses	X
	Major Area Courses	
	Supportive Courses	
	Media and Managment Skills Courses	
	Transferable Skill Courses	

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week16	Subjects	Related Materials
1	Introduction: Basic concepts in economics	
2	Single Variable Optimization -using first derivatives and second derivatives to find maxima and minima - applications to economics and finance	Mathematics for Economists, Simon and Blume Chp. 4 -Calculus and its Applications Bittenger, Ellenbogen, and Surgent Chs 2.1-2.5 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Chs 7-8 Core Project Leibniz Supplements 2-3.
3	Single Variable Optimization -using first derivatives and second derivatives to find maxima and minima, extreme value theorem - applications to economics and finance	Mathematics for Economists, Simon and Blume Chp. 4 -Calculus and its Applications Bittenger, Ellenbogen, and Surgent Chs 2.1-2.5 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Chs 7-8 Core Project Leibniz Supplements 2-3.
4	Single Variable Calculus- derivatives and marginals ; elasticity; implicit function theorem - applications to economics and finance	Mathematics for Economists, Simon and Blume Chp. 4 -Calculus and its Applications Bittenger, Ellenbogen, and Surgent Ch 2.6-2.8 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 8 - Core Project Leibniz Supplements 2-3.
5	Single Variable Calculus- derivatives and marginals ; elasticity; implicit function theorem - applications to economics and finance	Applications Bittenger, Ellenbogen, and Surgent Ch 61-6-2 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 8 - Core Project Leibniz Supplements 5.
6	Mid-term Exam I (23.10.2017)	

7	Multivariable Calculus - functions of several variables, partial derivatives and geometric representation	Mathematics for Economists, Simon and Blume Chp. 14 -Calculus and its Applications Bittenger, Ellenbogen, and Surgent Chs 6.1-6.3 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 11
8	Multivariable Optimization	Mathematics for Economists, Simon and Blume Chp 17, Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 13 Calculus and its Applications Bittenger, Ellenbogen, and Surgent Chs 6.4
9	Constrained Optimization I	Mathematics for Economists, Simon and Blume Chp 18 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 14
10	Constrained optimization II	Mathematics for Economists, Simon and Blume Chp 18 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 14
11	Mid-term Exam II	
12	Simple Regression I	Statistics for Business and Economics, Newbold, Carlson and Thorne, Ch 11
13	Multiple Regression	Statistics for Business and Economics, Newbold, Carlson and Thorne, Ch 12
14	Multiple Regression	Statistics for Business and Economics, Newbold, Carlson and Thorne, Ch 12
15	Review of the Semester	
16	Review of the Semester	

SOURCES

Course Notes / Textbooks	Mathematics for Economists, Carl P. Simon, Lawrance Blume. W.W. Norton & Company, Inc. (1994) - Managerial Economics, Allen, Doherty, Weigelt and Mansfield W.W. Norton & Company, Inc. 6th edition - Optimization Methods in Finance, Cornuejols and Tütüncü Cambridge University Press (2007), Quantitative Methods for Finance and Investments, Teall and Hasan Balackwell Publishing (2002), Essential Mathematics for Economic Analysis, Sysaeter and Hammond, Prentice Hall, 3rd Edition
Suggested Readings/Materials	

EVALUATION SYSTEM

Semester Activities	**Number**	**Percentage of Grade**
Participation	15	10
Laboratory / Application	-	-
Field Work	-	-
Quiz/Studio Critic	-	-
Portfoilo	-	-
Homework Assignment	2	20
Presentation/Jury	-	-
Project	1	20
Seminar/Workshop	-	-
Oral Exam	-	-
Midterm	2	50
Final	-	-
Total	20	100

WEIGHTING OF SEMESTER ACTIVITIES ON THE FINAL GRADE	**-**	**80**
WEIGHTING OF END-OF-SEMESTER ACTIVITIES ON THE FINAL GRADE	**-**	**20**
Total	0	100

ECTS / WORKLOAD TABLE

Semester Activities	Number	Duration (Hours)	Total Workload
Course Hours (Including Exam Week: 16 x Total Hours)	16	3	48
Laboratory / Application Hours	-	-	-
Study Hours Out of Class	16	4	64
Field Work	-	-	-
Quiz / Studio Critique	-	-	-
Portfolio	-	-	-
Homework / Assignment	2	16	32
Presentation / Jury	-	-	-
Project	1	31	31
Seminar / Workshop	-	-	-
Oral Exam	-	-	-
Midterm	2	25	50
Final	-		-
		Total Workload	**225**

THE RELATIONSHIP BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS

#	Program Qualifications / Outcomes	* Level of Contribution				
		1	2	3	4	5
1	To improve and deepen expertise in economics and finance.					
2	To be able to comprehend the interaction between economics, finance and related fields.					
3	To be able to apply the advanced level knowledge acquired in economics and finance.					
4	To be able to create new knowledge by combining the knowledge of finance and economics with the knowledge coming from other disciplines and be able to solve problems which requires expert knowledge by applying scientific methods.				X	
5	To be able to use computer programs needed in the fields of economics and finance as well as information and communication technologies in advanced levels.					
6	To be able to think analytically to identify problems in finance and economics and to be able to make policy recommendations in economics and finance based on scientific analysis of issues and problems.					X
7	To be able to develop new strategic approaches for unexpected, complicated situations in finance and economics and take responsibility in solving it.					
8	To protect the social, scientific and ethical values at the data collection, interpretation and dissemination stages and to be able to institute and observe these values.					X
9	To be able to critically evaluate the knowledge in finance and economics, to lead learning and carry out advanced level research independently.					
10	To be able to use a foreign language for both following scientific progress and for written and oral communication.					

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest