ÇANKAYA UNIVERSITY
Faculty of Economics and Administrative Sciences
Course Definition Form

Part I. Basic Course Information

Department Name	ECONOMICS				**Dept. Numeric Code**	3 1
Course Code	E C O N 2 2 3	**Number of Weekly Lecture Hours** 3	**Number of Weekly Lab/Tutorial Hours** 0	**Number of Credit Hours** 3		
Course Web Site	http:// econ223.cankaya.edu.tr			**ECTS Credit**	0 4	

Course Name and Other Course Information
This information will appear in the printed catalogs and on the web online catalog.

English Name	Quantitative Methods in Economics
Turkish Name	İktisatta Kantitatif Yöntemler
Mode of Delivery	Face to face
Language of Instruction	English

Course Description
Provide a brief overview of what is covered during the semester. This information will appear in the printed catalogs and on the web online catalog.
Maximum 60 words.

This course introduces fundamental mathematical tools and techniques used in undergraduate economic theory courses. Topics to be covered include equilibrium analysis in economics, matrix algebra and its economic applications, comparative statics analysis, economic applications to comparative statics analysis, exponential and logarithmic functions, unconstrained and constrained static optimization theory with applications to economic analysis, economic dynamics and integral calculus.

	1st	2nd	3rd	4th
Prerequisites (if any) *Give course codes and check all that are applicable.*				
	☐ Consent of the Instructor	☐ Senior Standing	☐ Give others, if any.	
Co-requisites (if any)	1st	2nd	3rd	4th
Course Type *Check all that are applicable*	☒ Must course for dept ☐ Must course for other dept.(s) ☐ Elective course for dept. ☐ Elective course for other dept.(s)			

Part II. Detailed Course Information

Course Objectives
Maximum 100 words.

The purpose of this course is to introduce students to fundamental mathematical tools employed in economic analysis and to examine applications from a wide range of subfields in economics such as consumer and producer theories, macroeconomics, and economic growth.

Learning Outcomes
Explain the learning outcomes of the course. Maximum 10 items.

Upon successful completion of this course, students will be able to:
1. Develop an understanding of the relationship between mathematical techniques and economic modeling.
2. Apply appropriate quantitative techniques to economic analysis and conduct economic analysis using mathematics.
3. Learn how to formulate economic problems in mathematical terms, and interpret mathematical concepts in the context of economics.
4. Apply matrix algebra to simple economic problems and models.
5. Get acquainted with comparative statics techniques and demonstrate an understanding of how they are used to derive testable predictions from economic models.
6. Apply constrained and unconstrained optimization techniques to economic problems.
7. Exhibit proficiency in integral calculus and learn how to apply it in the analysis of economic problems.

Textbook(s)
List the textbook(s), if any, and other related main course material.

Author(s)	Title	Publisher	Publication Year	ISBN
Chiang, Alpha C. and K. Wainwright	Fundamental Methods of Mathematical Economics, 4th edition	McGraw-Hill/Irwin	2005	978-0071238236

Reference Books
List, if any, other reference books to be used as supplementary material.

Author(s)	Title	Publisher	Publication Year	ISBN
Baldani, J., J. Bradfield and R. W. Turner	Mathematical Economics, 3rd edition	Linus Publications	2011	978-1607971726
Simon, C. P. and L. Blume	Mathematics for Economists	W. W. Norton & Company	1994	978-0393957334
Sydsaeter, K., P. Hammond, A. Strom and A. Carvajal	Essential Mathematics for Economic Analysis, 5th edition	Pearson Education	2016	978-1292074610

Teaching Policy
Explain how you will organize the course (lectures, laboratories, tutorials, studio work, seminars, etc.)

The teaching strategy will be mostly based on lectures and problem solving. Students are expected to participate in class discussions and are encouraged to ask questions and share their opinions. Instructor will hold regular office hours specifically to answer students' questions about the course material and assist them.

Laboratory/Studio Work
Give the number of laboratory/studio hours required per week, if any, to do supervised laboratory/studio work and list the names of the laboratories/studios in which these sessions will be conducted.

NA

Computer Usage
Briefly describe the computer usage and the hardware/software requirements for the course.

NA

Course Outline
List the weekly topics to be covered.

Week	Topic(s)
1	Equilibrium analysis in economics.
2	Linear models and matrix algebra.
3	Economic applications of matrix algebra: Market and national-income models, Leontief input-output models.
4	Comparative statics and derivative; rules of differentiation.
5	Comparative static analysis.
6	Economic applications to comparative static analysis.
7	Midterm exam.
8	Optimization.
9	Exponential and logarithmic functions.
10	Case of more than one choice variable.
11	Optimization with equality constraints.
12	Economic applications of optimization with equality constraints: Utility maximization and consumer demand, cost minimization.
13	Economic dynamics and integral calculus.
14	Economic applications of integrals: From a marginal function to a total function, consumer surplus, investment and capital formation, present value of cash and perpetual flows, Domar growth model.

Grading Policy
List the assessment tools and their percentages that may give an idea about their relative importance to the end-of-semester grade.

Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage	Assessment Tool	Quantity	Percentage
Midterm Exam	2	50						
Final Exam	1	40						
Class Participation	1	10						

ECTS Workload
List all the activities considered under the ECTS.

Activity	Quantity	Duration (hours)	Total Workload (hours)
Attending Lectures (*weekly basis*)	14	3	42
Attending Labs/Recitations (*weekly basis*)	-	-	-
Compilation and finalization of course/lecture notes (*weekly basis*)	14	1	14
Collection and selection of relevant material (*once*)	1	1	1
Self-study of relevant material (*weekly basis*)	14	1	14
Take-home assignments	-	-	-
Preparation for quizzes	-	-	-
Preparation for mid-term exams (*including the duration of the exams*)	2	10	20
Preparation of term paper/case-study report (*including oral presentation*)	-	-	-
Preparation of term project/field study report (*including oral presentation*)	-	-	-
Preparation for final exam (*including the duration of the exam*)	1	13	13
TOTAL WORKLOAD **/** 25			100/25
ECTS Credit			**4**

No	Program Qualifications	Contribution				
	Program Qualifications vs. Learning Outcomes *Consider the program qualifications given below as determined in terms of learning outcomes and acquisition of capabilities for all the courses in the curriculum. Look at the learning outcomes of this course given above. Relate these two using the Likert Scale by marking with X in one of the five choices at the right.*	**0**	**1**	**2**	**3**	**4**
1	To know the fundamental concepts in economics and associated social sciences, and relate these concepts to each other.				X	
2	To know the quantitative and qualitative methods and computer skills necessary for testing hypotheses derived from economic theories for the purpose of contributing towards the solution of economic problems.					X
3	To acquire the necessary knowledge for gathering and processing data, and for building up the scientific research capacity to guide economic policy.				X	
4	To specialize in some of the sub-disciplines of economics, and to gain interdisciplinary analytical skills by making connections between those sub-disciplines and other social sciences.			X		
5	To have the ability to question, interpret, and analyze the findings of economic studies.					X
6	To develop the ability to present in writing as a report and verbally as a presentation the knowledge acquired through education.		X			
7	To be able to work in teams, and when necessary to rise up to the challenge individually.				X	
8	To gain life-long learning and critical-thinking skills.				X	
9	To be able to assess one's need for advanced study and to make plans accordingly by using the critical and analytical thinking skills gained during undergraduate studies.				X	
10	To gain the ability to use a language at least at the Level B1 of the European Language Portfolio to follow economic news and developments, and to communicate with colleagues.			X		
11	To maintain scientific, social, and ethical standards when collecting, interpreting, and disseminating economic information, and in application of economic ideas.					X
12	To be conscious of social and environmental needs.			X		
13	To develop an open-minded attitude towards new ideas and developments.				X	
14	To relate the knowledge gained through education to the cultural and historical characteristics of the society.		X			

Scale for contribution to a qualification: **0**-none, **1**-little, **2**-moderate, **3**-considerable, **4**-highest