ECON209: Mathematics for Economists

Spring 2024-2025

Instructor:	Elif Zeynep SERPER
Lecture Hours:	Mon 15:00-17:00, Room: G112 – Tue 16:00-17:00, Room: G003
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Office Hours:	By appointment
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GENERAL INFORMATION

Course Description:

This course provides a comprehensive introduction to the mathematical techniques essential for understanding and solving economic problems. It covers various mathematical concepts and applications that are fundamental to economic analysis, including optimization, dynamic models, probability theory, and basic statistics.

Course Objectives:

The course covers the theoretical and practical aspects of mathematical methods used in economics. It delves into single-variable and multi-variable optimization techniques, providing a foundation for understanding dynamic economic models and their applications in economics. The course introduces basic topics in probability theory, including conditional probability, random variables, and both discrete and continuous probability distributions. Additionally, it discusses mathematical expectation and its relevance in economic contexts. By the end of the course, students will be able to apply these mathematical tools to analyze and solve a variety of economic problems.

Credits: (3+1+0) 3 TEDU Credits, 6 ECTS Credits

Prerequisites/Corequisites: Pre-requisites: MATH 115, Co-requisites: NONE

TEXTBOOK

There is no *required* textbook for this course. Lecture materials will mostly be sufficient. You can see the suggested supplementary materials below:

1. Jacques I. Mathematics for Economics and Business. Pearson Education; 10th Ed., 2023.
2. Newbold P, Carlson WL, Thorne BM. Statistics for Business and Economics. Pearson; 10th Global Edition, 2022.

PLANNED SCHEDULE

Week	Topic	Dates
Week 1	Syllabus and Introduction Introduction to Optimization	10-14 Feb
Week 2	Linear Optimization	17-21 Feb
Week 3	Non-linear Optimization	24-28 Feb
Week 4	Differentiation	3-7 March
Week 5	Optimization Applications	10-14 March
Week 6	Integration (**Exam I**)	17-21 March
Week 7	Linear Algebra	24-28 March
No Classes – Ramadan Bayram & Spring Break		-
Week 8	Linear Algebra (cont.) Introduction to Statistics and Data	7-11 April
Week 9	Probability: Conditional and Unconditional	14-18 April
Week 10	Discrete Random Variables (*No class on April 23 – not affected*)	21-25 April
Week 11	Discrete Probability Distributions (*No class on May 1 – not affected*)	28 April - 2 May
Week 12	Continuous Probability Distributions (**Exam II**)	5-9 May
Week 13	Joint Distributions	12-16 May
Week 14	Introduction to Sampling (*No class on May 19 – Monday*)	19-23 May
Week 15	Introduction to Sampling (*Week 14's Monday class will be held this week*)	26-30 May

GRADING

Midterms (20%+20%): There will be two midterm exams, tentatively scheduled at the lecture hours in Week 6 (**March 17**) and Week 12 (**May 5**).

Assignments (30%): Assignments are crucial in helping you to understand the material taught in class, but it will also ask you to apply concepts from class to a variety of real-world issues to develop your critical thinking skills. Late assignments will not be accepted.

Final (30%): There will be a written final exam covering all the material studied in this class.

Bonus: Class Participation (10%): Active in-class participation will be rewarded with an extra 10% added to your overall grade.

OTHER COURSE POLICIES

Policy on Syllabus Change: This course schedule is tentative, and it will be adapted to the pace of the class in agreement with the students.

Makeup Policy: Make-up exams will be given only for medical excuses documented by medical reports that are approved by the Student Health Center or other documented excuses approved by the university's executive branches. All make-up examination(s) for all exams will be given at the end of the semester.

Late Submission Policy: Late submissions of the assignments will not be graded.

Calculator Policy: You may use a calculator unless instructed not to do so. You may not use a cellular device as a calculator during exams.

Attendance: You are expected to attend all classes. Classes start on the hour. Please be respectful of your classmates and the instructor by being on time. Cell phones should be turned off and kept out of sight. Please do not use your computers during class time.

STUDENT CONDUCT

Academic Integrity: Academic dishonesty in assignments, examinations, or other academic performance is prohibited and considered a violation of the Student Conduct Regulations. It includes `cheating' (the intentional use or attempted use of unauthorized materials, information or study aids); `fabrication' (the intentional falsification or invention of any information); `assisting in dishonesty or tampering' (intentionally of knowingly helping or attempting to help another commit an act of dishonesty or tampering with evaluation instruments and documents); and `plagiarism' (intentionally or knowingly representing the words or ideas of another person as one's own). Penalties for academic dishonesty may result in receiving an 'F' in the course, or referral to the Dean of the Faculty in which you are enrolled for further action.

STUDENT SERVICES INFO:

Student Development and Psychological Counseling Center:

Student Development and Psychological Counseling Center conducts individual psychological counseling, group psychological counseling, preventive and developmental services such as workshops and seminars for all students in need. You may apply to our Center in order to deal with all your current problems.
For General Information: https://csc.tedu.edu.tr/
For Application: https://anket.tedu.edu.tr/index.php/761882?lang=en

TEDU Without Barriers Unit:

Please inform the *TEDU Without Barriers* Unit and the instructor of the course about the specific issues in case you have a physical or mental disability and are having trouble

with anything related to this course—such as accessing the material, participating in the class, taking notes, preparing for, attending or managing to complete the exams. Your situation will be reviewed by commission, in accordance with the principle of confidentiality, and if deemed appropriate, facilitating measures will be taken so that you can take the course more efficiently.

For further information and/or questions:

https://engelsiz.tedu.edu.tr/ or engelsiz@tedu.edu.tr