Ankara Yildirim Beyazit University

Faculty of Political Sciences

Department of Economics

2024-2025 Academic Year / Fall Semester

ECON 205 Mathematics for Economists Course Syllabus

Dr. Mert Akyuz

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Course Schedule & Place: Friday 09.00 – 11.50 & B-338 D-1

Course Description & Objectives:

This course provides a comprehensive introduction to the mathematical tools and techniques essential for understanding and analyzing economic theories and models. Emphasizing both theoretical foundations and practical applications, students will explore key concepts in calculus, linear algebra, and optimization, learning to apply these skills to solve economic problems and make informed decisions. Topics will include differentiation, integration, matrix algebra, and dynamic systems. Also, this course covers general optimization problems for functions of several variables, both with and without constraints formed by equality and inequalities.

The aim of this course is to help students understand and apply essential mathematical concepts relevant to economic theory, teaching the skills required for problem solving and decision making in economic contexts. Students will develop proficiency in calculus and linear algebra, enabling them to formulate and analyze economic models effectively. The course includes lectures, teaching sessions, and opportunities for regular self-study, equipping students with the skills necessary for effective problem solving and decision making in economic contexts.

Course Requirements & Readings

All students are required to read the course materials. The textbook is indicated below:

Mathematics for Economists**,** Carl P. Simon, Lawrence E. Blume, W. W. Norton & Company, 1st Edition, 1994 (*Textbook*)

Grading

The course will have a midterm in the middle of the semester and a final exam at the end. Grading will be based on the following weights: Midterm Exam (40%) and Final exam (60%).

*Note: Course attendance is mandatory.

Overview of the Course

Week 1: Introduction (Chapter 1)

Week 2: One Variable Calculus I (Function, Derivatives) (Chapter 2)

Week 3: One Variable Calculus II (Maxima and Minima) (Chapter 3)

Week 4: One Variable Calculus III (Chain Rule) (Chapter 4)

Week 5 One Variable Calculus IV (Exponents and Logarithms) (Chapter 5)

Week 6: Linear Algebra I (Systems of Linear Equations) (Chapter 6 & 7)

Week 7: Linear Algebra II (Matrix) (Chapter 8)

Week 8: Linear Algebra III (Determinants) (Chapter 9)

Week 9: Calculus of Several Variables I (Derivatives) (Chapter 14)

Week 10: Calculus of Several Variables II (Implicit Functions) (Chapter 15)

Week 11: Unconstrained Optimization (Chapter 17)

Week 12: Constrained Optimization I (Chapter 18)

Week 13: Constrained Optimization II (Chapter 19)