ECON 205 Mathematics for Economists Syllabus

Ankara Yildirim Beyazit University

Faculty of Political Sciences

Department of Economics

2026-2027 Academic Year / Fall Semester

Dr. Mert Akyuz / makyuz@aybu.edu.tr

Course Schedule & Place: Wednesday 13.30 – 16.00 & B-375 D-13

Course Content & Objectives:

This course introduces the mathematical tools used to formulate and analyze economic models. Topics include functions of one variable and their derivatives, maxima and minima, the chain rule, exponential and logarithmic functions, systems of linear equations, matrices, determinants, partial and total derivatives, and unconstrained and constrained optimization of functions of several variables. The course develops students' ability to express economic relationships mathematically, apply calculus and linear algebra to economic problems, solve systems of equations to determine equilibrium outcomes, and identify and interpret optimal choices. Emphasizing logical reasoning, problem-solving skills, and the economic interpretation of mathematical results, it provides a foundation for subsequent study in microeconomics, macroeconomics, and econometrics. Teaching and learning activities include assigned readings and class discussions.

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 (Functions, Derivatives) (Chapter 1 & 2)

Week 3: One Variable Calculus II (Functions, Derivatives) (Chapter 2)

Week 4: One Variable Calculus III (Maxima and Minima) (Chapter 3)

Week 5: One Variable Calculus IV (Chain Rule) (Chapter 4)

Week 6: One Variable Calculus IV (Exponentials and Logarithm) (Chapter 5)

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

Week 8: Midterm Exam

Week 9: Linear Algebra II (Matrix) (Chapter 8)

Week 10: Linear Algebra III (Determinants) (Chapter 9)

Week 11: Calculus of Several Variables I (Partial & Total Derivative) (Chapter 14)

Week 12: Unconstrained Optimization (Chapter 16)

Week 13: Unconstrained Optimization (Chapter 17)

Week 14: Constrained Optimization (Chapter 18)

Week 15: Constrained Optimization (Chapter 19)

Disability Policy: If you have a documented disability (e.g., visual, hearing, or physical impairment, etc.) that may influence your performance in this course, it is recommended to meet with the Engelsiz AYBU (https://aybu.edu.tr/engelsiz/content_list-327-yildirim-beyazit-universitesi-engelsiz-universite-birimi-yonergesi.html) to arrange for reasonable conditions (such as accommodation, etc.) to ensure an equitable opportunity to meet all the requirements of this course. You may also contact the local authority of the Faculty of Political Sciences. You should communicate your needs to the course instructor as soon as possible to ensure that any course needs concerning exams, lecture materials, etc. are met.

Artificial Intelligence (AI) Policy: The use of artificial intelligence (AI) and artificial general intelligence (AGI) tools are prohibited during classes and examinations. Students are expected to demonstrate their own understanding, reasoning, and knowledge in all classroom activities and exam answers. The use of AI and GAI tools during examinations will be treated as a violation of academic integrity and addressed in accordance with the university's policies and procedures.