

Syllabus for Mathematics for Economists
2009/2010
II Term. Linear Algebra

Lecturer Tornike Kadeishvili
e-mail: kade@rmi.acnet.ge, t.kadeishvili@iset.ge

Teaching Assistant Zaza Tevdoradze

Reading:

[SB] C. P. Simon, L. Blume. "Mathematics for Economists". W.W. Norton. 1994.

[CW] A.C. Chiang, K. Wainwright. "Fundamental Methods of Mathematical Economics". McGraw-Hill. 2005

[LN] Lecture Notes.

Grades: homeworks - 10%, midterm - 40%, final exam - 50%.

Notes on homework: Problems sets will be assigned every week and will be due next week before the class starts.

Week 1

Systems of Linear Equations

Systems of linear equations, elementary methods of solution, first economical examples

Week 2

Matrix Algebra

Reading SM, Ch. 8, 153-180

Matrix operations, systems of linear equations in matrix form, inverse matrix, economical examples

Week 3

Determinant

Reading SM, Ch. 9, 188-198

Definition, computation, main properties, inverse of non degenerate matrix, Cramer's rule

Week 4

Euclidian Spaces

Reading SM, Ch. 10, 199-222

Vectors, dimension, operations on vectors, inner product, norm and metric, angle between vectors

Week 5

Dimension and Basis

Reading SM, Ch. 10, 222-236, Ch. 11, 237-250

Lines and planes, linear independence, spanning set, basis

Week 6

Subspaces Attached to a Matrix

Reading SM, Ch. 27, 751-371

Vector spaces and subspaces, basis and dimension of a subspace, row and column spaces of a matrix, null space, fundamental theorem of linear algebra

Week 7

Economical Applications

Input-output analysis, Markov matrices, Linear Programming.