MATHEMATICS APPLIED TO ECONOMICS

Elements of Linear Algebra. Linear Programming

1. Linear systems. Gauss-Jordan method
2. Particular types of solutions of linear systems. Convex sets
3. Linear programming. Simplex algorithm. Multiple solutions
4. Dual problem. Application to Game Theory
5. Optimal solutions of linear problems by numerical methods. Reoptimizations and parametrizations
6. Transportation problems

Real-valued functions of *n* variables

7. Elements of Topology of $\mathbf{R}^n$. Quadratic forms. Types of quadratic forms
8. Real-valued functions of *n* variables. Limits. Continuity. Partial derivatives. Gradient vector. Differentiability. Higher-order partials derivatives.
9. Taylor's formula. Local maximizer (minimizer) points of a function
10. Applications to economic models
11. Equality constraints. The Lagrange method

Elements of Probability Theory

12. Events. Probability
13. Clasical schemas: Poisson, Bernoulli, hypergeometrical
14. Random Variables. Numerical characteristics