MOD. I - QUANTITATIVE METHODS

Course Title: **Mathematics**

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Course Content:

Using mathematical symbols in the statement of economic problems and mathematical theorems as an aid to reasoning, is the standard approach to mainstream economic analysis. The goal of this course is to introduce students to the fundamentals of mathematical economics focusing on functions and optimization. The course consists of three distinct but related parts. The course starts by discussing one-variable and multi-variable calculus and the applications of calculus to the study of functions. The second part of the course introduces students to the basi notions of matrix algebra. The third part of the course is devoted to unconstrained and constrained optimization. Students are expected to be familiar with the notions of function, vector, matrix, derivative, differential and with elementary algebra.

Duration: 21 hours

Exam: Written test, four questions (systems of equation, matrix algebra, derivatives, functional analysis plus a bonus question), maximum 7.5 points each.

Suggested Reading:

Wainwright K., Chiang A., Fundamental methods of Mathematical Economics, McGraw Hill; 4 edition. Selected section drawn from the following chapters: Chapters: 1. The Nature of Mathematical Economics; 2. Economic Models; 3. Equilibrium Analysis in Economics; 4. Linear Models and Matrix Algebra; 5. Linear Models and Matrix Algebra (Continued); 6. Comparative Statics and the Concept of Derivative; 7. Rules of Differentiation and Their Use in Comparative Statics; 8. Comparative-Static Analysis of General-Function Models; 9. Optimization: A Special Variety of Equilibrium Analysis; 11. The Case of More than One Choice Variable; 12 Optimization with Equality Constraints

Additonal reading:

Simon C.P., Blume L., (1994), *Mathematics for Economists*, Norton & Co, New York and London

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