Syllabus – Mathematics Pre-Course Fall 2017

University of Rome "Tor Vergata"

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Outline of the course

The preparatory course in mathematics, held in September, prior to the start of the core courses, is aimed at reviewing of the fundamental concepts and some common basics for students enrolling in the MSc in Economics and in the MSc in Finance and Banking. Attending pre-courses preparation is considered obligatory for those students who at the time of application do not have a strong background in mathematics and can be used as an opportunity to review important concepts for those who already have a solid foundation in the subject.

Syllabus

The main reference for the course is

- "Mathematics for economists" Simon, Carl P. and Lawrence Blume. Vol. 7. New York: Norton, 1994

Here below a detailed report of the sections which will be covered:

- **Part I: Introduction**
  1. Introduction 2. One-Variable Calculus: Foundations 3. One-Variable Calculus: Applications 4. One-Variable Calculus: Chain Rule 5. Exponents and Logarithms

- **Part II: Linear Algebra**
  6. Introduction to Linear Algebra 7. Systems of Linear Equations 8. Matrix Algebra 9. Determinants: An Overview 10. Euclidean Spaces 11. Linear Independence

- **Part VI: Advanced Linear Algebra**
  27. Subspaces Attached to a Matrix

- **Part VII: Advanced Analysis**
  29.2 Compact Sets 30.1 Weiestrass's and mean value theorems 30.2 Taylor Polynomials on $\mathbb{R}$

- **Part VIII: Appendices**
  A1. Sets, Numbers, and Proofs A2. Trigonometric Functions A3. Complex Numbers A4. Integral Calculus