		Programme of **"Mathematical Methods"**		

L-18

Number of ECTS credits: 9 (workload is 63 hours; 1 credit = 7 hours)

Teacher:
 CARLA BARRACCHINI

1	**Course objectives**	The course aims to provide essential tools to enable students to tackle recurring issues in economics Good students ability to use basic mathematical tools for economic and financial analysis that will meet in the following disciplines of general mathematics.
2	**Course content and Learning outcomes (Dublin descriptors)**	Real functions of real variable and graphic and analytical study. Progressions, Succession and Numerical Series. Convergence criteria. Continuous functions and types of discontinuities. Functions of two real variables: continuity, directional derivative, partial, gradient and Hessian matrix; Free and bound maximum and minimum points: Lagrange constraints and method of Lagrange multipliers. Notes on economic applications. Homogeneous functions: Euler theorem and economic applications. Indefinite and definite integers, properties, fundamental theorem of integral calculus, integration methods: for parts, for substitution and simple fractions. Ordinary differential equations: with separable first-order variables, linear and first-order linear coefficients (CENNI). Vectors and matrices: algebra, product for a scalar, linear combination, dependence and linear independence, rank, determinant, symmetrical and invertible matrices. Linear systems: homogeneous and non-homogeneous. Rouchè-Capelli Theorem and Cramer's Theorem. Resolution of linear systems. Linear transformations. Auto values and car vectors, algebraic and geometric multiplicity, diagonal matrix.
3	**Prerequisites and learning activities**	Pre-Course di mathematical method: mathematics for economics and financial applications. Algebraic and literal calculation, MCD, mcm. Arithmetic and geometric progressions. Combination calculus: main formulas. equations And inequalities of first and second degree. Power Properties, Logarithms and exponentials. Equations and inequalities with exponentials and logarithms. Properties of radicals and absolute value. Equations and Inequalities with roots and absolute value. Equations and inequalities in the presence of products and Algebraic expressions. Systems of equations and inequalities. Trigonometry: Fundamental formulas and trigonometric functions. Analytical geometry: Cartesian plane, Angular coefficient of a straight line Parallel and perpendicular equations, equation of the parabola, equation of the circumference, equation of the ellipse and hyperbol

4	Teaching methods and language	Frontal teaching lessons in italian
5	Assessment methods and criteria	Positive written test scores for access to the oral exam