Syllabus
Course description

Course title	**Preparatory Course in Mathematics – Mathematics for Economists**
Course code	99999
Scientific sector	SECS-S/06
Degree	
Semester and academic year	23.08.2021 – 03.09.2021
Year	1st year
Credits	-
Modular	No
Total lecturing hours	30 Group A and 30 Group B
Total lab hours	-
Total exercise hours	-
Attendance	recommended, but not required
Prerequisites	not required
Specific educational objectives	The course refers to the educational activities chosen by the student and belongs to the scientific area of Statistics -Mathematics. The course gives a general overview of Precalculus Mathematics, which prepares for the Mathematics for Economists course. The course is directed to 1st year students who are going to attend the Mathematics for Economists course. Educational objectives: (1) Refresh mathematical knowledge taught in high school, fill gaps and add a few new insights. (2) Motivate to experience and communicate (about) Mathematics.

Lecturer	Dr. Michael Krueger Office E310 michael.krueger@unibz.it Tel.: +39 0471 013278/013279 https://www.unibz.it/en/faculties/economics-management/academic-staff/
Scientific sector of the lecturer	SECS-S/06
Teaching language	English
Office hours	-
Lecturing assistant	-
Teaching assistant	-
Office hours	-
List of topics covered	1. Getting acquainted: history of mathematics – a sketch. Some problems in mathematics. Modern Mathematical reasoning: sets and logic. 2. Natural, Integer, Rational, Irrational, Real Numbers. Some operations: addition, subtraction, multiplication and division, roots, powers. Absolute values. 3. Elementary algebra. Commutativity, associativity, neutral and inverse elements. Distributivity. Polynomials terms of second and third degree. Factorization of a polynomial. 4. Real functions. Graph of a real function. Operations with some elementary functions: constant, linear, quadratic, and

	cubic functions.
	5. Exponentials and logarithms, powers and exponentials, Euler's number e and logarithms. Equations and inequalities.
	6. Simultaneous equations. Existence of solutions. Exponential and logarithmic equations and inequalities.
	7. Functions - advanced. Composition of functions. Inverse functions. Symmetries of a function. Examples.
	8. Sequences and series: Elementary properties.
	9. Elements of Linear Algebra, vectors and matrices.
Teaching format	Lectures and exercises.
Learning outcomes	**Knowledge and understanding**: Basic mathematical knowledge will be revised and consolidated, and operations with elementary solution procedures will be studied. **Applying knowledge and understanding**: By elementary examples from economic theory, a basic understanding for the necessity of mathematical modeling in economics is aimed for. **Making judgments**: The ability to make fundamental distinctions in Mathematics (linear vs. nonlinear, first order vs. higher order etc.) is aimed for. Moreover, a first intuition for quantitative vs. qualitative models should be provided. **Communication skills:** Basic abilities to apply a mathematical language in an economical framework will be aimed for. The students will be encouraged to discuss aspects of mathematical constructions. **Learning skills**: Preparation for the Mathematics for Economists course.
Assessment	Only informal assessment.
Assessment language	English
Evaluation criteria and criteria for awarding marks	No marks/grades.
Recommended reading	Sydsaeter, K./Hammond, P., Essential Mathematics for Economic
	Analysis, 2. edition, Prentice Hall 2006, Chapters 1 - 5