

Syllabus

Course description

Course title	Preparatory course in Mathematics – Mathematics for Economics
Course code	30152
Scientific sector	SECS-S/06
Degree	Tourism, Sport and Event Management
Semester and academic year	27.08.2018 – 08.09.2018
Year	1st year
Credits	-
Modular	No

Total lecturing hours	30
Total lab hours	-
Total exercise hours	-
Attendance	recommended, but not required
Prerequisites	not required
Course page	https://www.unibz.it/en/faculties/economics-management/bachelor-tourism-sport-event-management/course-offering/?academicYear=2018

Specific educational objectives	<p>The course refers to the educational activities chosen by the student and belongs to the scientific area of Statistics -Mathematics.</p> <p>The course gives a general overview of scientific contents. Precalculus Mathematics is reviewed 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.</p> <p>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.</p>
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Lecturer	Prof. Dr. rer. nat. habil. Andreas Hamel Email: Andreas.Hamel@unibz.it Bruneck- Brunico Campus. 1 st Floor, Professors Room 1.11 https://www.unibz.it/en/faculties/economics-management/academic-staff/person/33708-andreas-heinrich-hamel
Scientific sector of the lecturer	SECS-S/06
Teaching language	English
Office hours	-

Lecturing assistant	-
Teaching assistant	-
Office hours	-
List of topics covered	<ul style="list-style-type: none"> • Basic mathematical language: Sets and logical expressions. • Numbers and their properties: integers, rational and irrational numbers, the real line, order properties. • Elementary algebraic rules: commutativity, associativity, neutral element, inverse element and distributivity. Expanding and factorizing. • Algebraic expressions: monomials, polynomials, rational and irrational expressions. Elementary theorems of algebra: powers of a binomial. Operations with polynomials. Factorization of a polynomial: roots and the fundamental theorem of algebra. • Functions: definition, examples, real functions and their graphs. Elementary functions: constant, linear, quadratic, polynomial functions. • Exponentials and logarithms. Powers and exponentials: definition and properties. Roots and logarithms: definition and properties. Polynomial approximation to exponentials. The number e. Natural exponential and logarithms. • Equations and inequalities. Polynomial equations: linear, quadratic and higher order. Solution versus factorization. Polynomial inequalities. Simultaneous equations. Exponential and logarithmic equations and inequalities. • Basic geometry: Cartesian frame of reference. Coordinates and points. Distance. Lines and equations. The straight line: implicit and explicit equation, slope and intercept, distance between a point and a straight line. A geometrical approach to inequalities. The circle: equation, centre and radius.
Teaching format	Lectures and exercises.
Learning outcomes	<p><u>Knowledge and understanding:</u> Basic mathematical knowledge will be revised and consolidated, familiarity with elementary solution procedures (e.g. for quadratic equations or finding the equation of a straight line) will be generated.</p> <p><u>Applying knowledge and understanding:</u> By elementary examples from economic theory, a basic understanding for the necessity of mathematical modeling in economics is aimed for.</p> <p><u>Making judgments:</u> 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.</p>

	<p>Communication skills: Basic abilities to apply a mathematical language in an economical framework will be aimed for. The students will be challenged to talk to the professor and to each other about mathematical constructions.</p> <p>Learning skills: Prepares for the Mathematics for Economists course which requires a solid understanding of mathematical concepts.</p>
Assessment	Only informal assessment.
Assessment language	English
Evaluation criteria and criteria for awarding marks	No marks/grades.
Required readings	Manual of Precalculus Mathematics, J.G. Brida. ISBN 978-88-6046-027-1. Bozen-Bolzano University Press, 2009. (recommended reading)
Supplementary readings	Will be announced at the beginning of the course.