

Syllabus

Descrizione corso

Titolo insegnamento	OFA-Mathematics
Codice insegnamento	27361
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	NN
Lingua	Inglese
Corso di Studio	Corso di laurea in Economia e Management
Altri Corsi di Studio (mutuati)	
Docenti	dott. Thi Khanh Linh Ha, ThiKhanhLinh.Ha@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/46385
Assistant	
Semestre	Primo semestre
Anno/i di corso	1
CFU	0
Ore didattica frontale	20
Ore di laboratorio	-
Ore di studio individuale	-
Ore di ricevimento previste	-
Sintesi contenuti	OFA (obblighi formativi aggiuntivi) - ADDITIONAL STUDY ACHIEVEMENTS: Before the start of the first semester, the faculty offers a preparatory course in mathematics. The test at the end of the preparatory course serves to assess students' initial knowledge in mathematics. If the assessment is negative, the student will be assigned additional educational requirements (OFA) to be fulfilled within the first study year.

	<p>The additional achievements (OFA) can also be completed:</p> <p>by passing the test at the end of the OFA exercises</p> <p>or</p> <p>by passing the exam at the end of the first teaching module of the 'Mathematics' course (teaching module 1)</p> <p>or</p> <p>by passing the whole Mathematics exam (teaching module 1 + teaching module 2) within the first academic year.</p> <p>If these requirements are not met, students will not be allowed to take the examinations in the quantitative subjects of the second and third years of study.</p>
Argomenti dell'insegnamento	<ul style="list-style-type: none"> • Sets: explanation, representation/notation, elements/subsets, unions, intersections, a few rules, Cartesian product. • Functions: general definitions, examples, real functions as important special case. • Very brief re-introduction of natural numbers, integers, rational and real numbers with basic arithmetic rules, percentages. <p>Manipulating algebraic expressions, factoring out and expanding, manipulating fractions, polynomials.</p> <ul style="list-style-type: none"> • Absolute values, powers and roots, exponentials, logarithms: definition, computation, rules. • Real functions: tables of values and graphical representation, absolute value function, polynomial (linear, higher degrees) and power functions, exponential and logarithmic functions. • Solving linear equations with one variable, a complete case study of quadratic equations including graphs, equations which can be solved via taking logarithms. • Solving two linear equations with two variables simultaneously, cases with none, one and infinitely many solutions, graphical interpretation as intersection of lines. • Solving inequalities (optional): linear inequalities in one and two variables, inequalities involving absolute values in one variable. • Definition of factorials and permutations, binomial coefficients, Pascal's triangle and combinations.
Parole chiave	Precalculus, sets, functions, absolute values
Prerequisiti	none
Insegnamenti propedeutici	none
Modalità di insegnamento	Lectures and exercises

Obbligo di frequenza	Attendance not compulsory, but recommended
Obiettivi formativi specifici e risultati di apprendimento attesi	<p>ILO 1 Knowledge and understanding</p> <p>ILO 1.1 Knowledge of basic and intermediate mathematical tools for ILO</p> <p>ILO 1.2 Understanding and analysis of economic mechanisms through theoretical models and empirical applications</p> <p>ILO 1.3 Knowledge of tools for static, dynamic, and comparative analysis for the analysis of data on individuals, businesses, and economies</p> <p>ILO 1.4 Knowledge and understanding of descriptive statistics, the fundamentals of probability theory and sampling methods, standard distributions and their application to economic analysis, as well as linear and non-linear regression Understanding of parametric estimation and hypothesis testing</p> <p>ILO 1.5 knowledge of the IT tools needed to read and analyse economic data and models</p> <p>ILO 1.6 knowledge of the structure of IT networks, their main applications and security techniques, as well as techniques for collecting, presenting and analysing data with the aid of appropriate software</p> <p>ILO 1.7 knowledge of international accounting systems and the double-entry method for recording and evaluating business management operations</p> <p>ILO 1.8 Understanding of financial statements</p> <p>ILO 1.9 In-depth knowledge of accounting data recording or management control</p> <p>ILO 1.10 Knowledge of the analysis method for estimating present values and discount factors to estimate the cost of capital and the valuation of bonds and shares</p> <p>ILO 1.11 Knowledge of medium- and long-term financial forecasting methodologies and sensitivity analysis with simulation under conditions of uncertainty to manage corporate and international finance risks</p> <p>ILO 1.12 Knowledge and understanding of the international financial environment, techniques for defending against multinational risks, and competitive strategies adopted by global banks</p> <p>ILO 1.13 Knowledge of the mechanisms underlying effective communication of quantitative topics in three languages: Italian, German and English</p>

	<p>ILO 2 Quantitative methods for decision-making</p> <p>ILO 2.1 Ability to analyse (unconstrained) optimisation problems and mathematically interpret models of social and economic dynamics</p> <p>ILO 2.2 Ability to formalise economic problems through mathematical models, solve such problems and interpret the results conceptually</p> <p>ILO 2.3 Ability to analyse economic data using descriptive, parametric and non-parametric statistical methods as well as linear and non-linear regression and interpret the results</p> <p>ILO 2.4 Ability to apply international accounting standards to different business contexts</p> <p>ILO 2.5 Ability to extract and interpret economic information from the web</p> <p>ILO 2.6 Ability to use computers and computer networks to analyse large amounts of data in solving complex problems and to write theses and articles</p> <p>ILO 2.7 Ability to evaluate fixed-income financial instruments and shares of companies listed on stock markets using spreadsheet programmes</p> <p>ILO 2.8 Ability to analyse financial statements using balance sheet ratios and communicate the results in accordance with international professional standards</p> <p>ILO 2.9 Ability to apply the main theories on the capital, foreign exchange and commodity markets to actual data, including at international level</p> <p>ILO 2.10 be able to establish the structure and implementation of an empirical project using econometric software and financial or economic databases</p> <p>ILO 2.11 be able to use financial investment performance evaluation techniques and understand the mechanisms of pricing risky financial assets and spot and forward interest rates</p> <p>ILO 2.12 Ability to work with basic and intermediate mathematical tools and basic statistical tools to study the behaviour of economic agents from a theoretical and empirical perspective</p> <p>ILO 2.13 Ability to analyse economic datasets using spreadsheets or other appropriate software</p> <p>ILO 2.14 Ability to use IT tools for economic analysis</p> <p>ILO 2.15 Ability to communicate the results of quantitative analyses prepared in accordance with international professional</p>
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	standards in three languages: Italian, German and English
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	<p>Educational objectives:</p> <p>(1) Refresh mathematical knowledge taught in high school, fill gaps and add a few new insights.</p> <p>(2) Motivate to experience and communicate (about) Mathematics.</p> <p>(3) Introduce mathematical vocabulary in English which is the language of the Mathematics for Economists course.</p>
Modalità di esame	The test at the end of the preparatory course serves to assess students' initial knowledge in mathematics. If the assessment is negative, the student will be assigned additional educational requirements (OFA) to be fulfilled within the first study year. (ILO 1-2)
Criteri di valutazione	Correctness of solutions.
Bibliografia obbligatoria	Will be announced at the beginning of the course.
Bibliografia facoltativa	
Altre informazioni	
Obiettivi di Sviluppo Sostenibile (SDGs)	