Syllabus

Descrizione corso

Titolo insegnamento	Matematica per le applicazioni economiche
Codice insegnamento	27356
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	
Lingua	Inglese
Corso di Studio	Corso di laurea in Economia e Management
Altri Corsi di Studio (mutuati)	
Docenti	prof. dr. Martin Meier, Martin.Meier@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/50913 dr. Paolo Maraner, Paolo.Maraner@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/12920
Assistente	
Semestre	Tutti i semestri
Anno/i di corso	1
CFU	12
Ore didattica frontale	36+36
Ore di laboratorio	60+60
Ore di studio individuale	-
Ore di ricevimento previste	18+18
Sintesi contenuti	M1: The course "Mathematics for Economists M1" deals with basic mathematical concepts like sets, relations, functions, numbers, limits and absolute values. Moreover we will introduce functions of one variable by studying their basic properties, derivatives and their calculus, Taylor approximations and the Newton's method. We will also address the single-variable optimization (Fermat's rule

	and sufficient optimality conditions) and the elements of integration. M2: In this course we study linear algebra and functions of several variables.
Argomenti dell'insegnamento	M1: Sets, relations, functions. Basic algebra, numbers, approximations, sequences and their limits, series, geometric series. Real functions (polynomial, rational, irrational, exponential and logarithmic functions), limits of functions, differentiation,Taylor approximations, Newton's method, convexity, single variable optimization, integration. M2: 1. Matrix calculus, rank and linear independence, systems of linear equations, Gaussian elimination, applications. 2. Functions of several variables: gradients, Hesse matrices, Taylor approximation, convexity. 3. Multivariable optimization, Lagrange method and economic applications. Simple least square regression. 4. If enough time remains: Basics of probability theory.
Parole chiave	mathematics for economists, sets, relations, functions, linear algebra, optimization
Prerequisiti	none
Insegnamenti propedeutici	none
Modalità di insegnamento	Lectures and exercise sessions
Obbligo di frequenza	
Obiettivi formativi specifici e risultati di apprendimento attesi	ILO 1 Knowledge and understanding ILO 1.1 knowledge of basic and intermediate level mathematical tools for understanding and analysing economic mechanisms through theoretical models and empirical applications ILO 2 Apply knowledge and understanding ILO 2.1 know how to analyse (unconstrained) optimisation problems and mathematically interpret models of social and economic dynamics ILO2.2 knowing how to work with basic and intermediate level mathematical and basic level statistical tools to study the behaviour of economic subjects, from a theoretical and empirical point of view

	ILO 3 Making judgements ILO 3.1 choose the most appropriate quantitative and qualitative methods of analysis ILO 4 Learning skills ILO 4.1 analyse, critically process and integrate data, information and future experience, also using advanced software
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	M1: A written final exam (questions and problems to solve) which counts 100% for the M1 partial grade. ILO 1.1, ILO 2.1, ILO 3.1, ILO 4.1. M2: A written final exam (questions and problems to solve) which counts 100% for the M2 partial grade. ILO 1.1, ILO 2.1, ILO 3.1, ILO 4.1. The final mark is the average of the marks of M1 and M2 - There is no different assessment for attending and non-attending students.
Criteri di valutazione	Final grade: 50% grade for M1 partial grade, 50% for M2 partial grade. The results of assignments and partial exams are only valid for the academic year in question. They cannot be carried over beyond that time frame.
Bibliografia obbligatoria	Lecture Slides that will be uploaded in the reserve collection.
Bibliografia facoltativa	None.
Altre informazioni	
Obiettivi di Sviluppo Sostenibile (SDGs)	Sconfiggere la povertà, Partnership per gli obiettivi, Buona salute, Istruzione di qualità, Parità di genere, Acqua pulita e servizi igenico-sanitari, Energia rinnovabile e accessibile, Buona occupazione e crescita economica, Innovazione e infrastrutture, Ridurre le disuguaglianze, Città e comunità sostenibili, Utilizzo responsabile delle risorse, Lotta contro il cambiamento climatico,

	Utilizzo sostenibile del mare, Utilizzo sostenibile della terra, Pace e giustizia, Sconfiggere la fame

Modulo del corso

Titolo della parte costituente del corso	Mathematics for Economists 1
Codice insegnamento	27356A
Settore Scientifico-Disciplinare	STAT-04/A
Lingua	Inglese
Docenti	prof. dr. Martin Meier, Martin.Meier@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/50913
Assistente	
Semestre	Primo semestre
CFU	6
Docente responsabile	
Ore didattica frontale	36
Ore di laboratorio	60
Ore di studio individuale	
Ore di ricevimento previste	18
Sintesi contenuti	The course "Mathematics for Economists M1" deals with basic mathematical concepts like sets, relations, functions, numbers, limits and absolute values. Moreover we will introduce functions of one variable by studying their basic properties, derivatives and their calculus, Taylor approximations and the Newton's method. We will also address the single-variable optimization (Fermat's rule and sufficient optimality conditions) and the elements of integration.
Argomenti dell'insegnamento	Sets, relations, functions. Basic algebra, numbers, approximations, sequences and their limits, series, geometric series. Real functions (polynomial, rational, irrational, exponential and logarithmic functions), limits of functions, differentiation,Taylor approximations, Newton’s method, convexity, single variable optimization, integration.

Modalità di insegnamento	Lectures and exercise sessions.
Bibliografia obbligatoria	Lecture notes provided in due course (available in the Reserve Collection).
Bibliografia facoltativa	

Modulo del corso

Titolo della parte costituente del corso	Mathematics for Economists 2
Codice insegnamento	27356B
Settore Scientifico-Disciplinare	STAT-04/A
Lingua	Inglese
Docenti	prof. dr. Martin Meier, Martin.Meier@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/50913
Assistente	
Semestre	Secondo semestre
CFU	6
Docente responsabile	
Ore didattica frontale	36
Ore di laboratorio	60
Ore di studio individuale	
Ore di ricevimento previste	18
Sintesi contenuti	In this course we study linear algebra and functions of several variables.
Argomenti dell'insegnamento	1. Matrix calculus, rank and linear independence, systems of linear equations, Gaussian elimination, applications. 2. Functions of several variables: gradients, Hesse matrices, Taylor approximation, convexity. 3. Multivariable optimization, Lagrange method and economic applications. Simple least square regression. 4. If enough time remains: Basics of probability theory.
Modalità di insegnamento	Lectures and exercise sessions.

Bibliografia obbligatoria	Lecture notes provided in due course (available in the Reserve Collection)
Bibliografia facoltativa	