Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Mathematik für Wirtschaftswissenschaftler
Code der Lehrveranstaltung	27356
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	
Sprache	Englisch
Studiengang	Bachelor in Wirtschaftswissenschaften und Betriebsführung
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	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
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Alle Semester
Studienjahr/e	1
KP	12
Vorlesungsstunden	36+36
Laboratoriumsstunden	60+60
Stunden für individuelles Studium	-
Vorgesehene Sprechzeiten	18+18
Inhaltsangabe	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.
Themen der Lehrveranstaltung	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.
Stichwörter	mathematics for economists, sets, relations, functions, linear algebra, optimization
Empfohlene Voraussetzungen	none
Propädeutische Lehrveranstaltungen	none
Unterrichtsform	Lectures and exercise sessions
Anwesenheitspflicht	
Spezifische Bildungsziele und erwartete Lernergebnisse	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
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	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.
Bewertungskriterien	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.
Pflichtliteratur	Lecture Slides that will be uploaded in the reserve collection.
Weiterführende Literatur	None.
Weitere Informationen	

Ziele für nachhaltige Entwicklung (SDGs)	Keine Armut, Partnerschaften zur Erreichung der Ziele, Gesundheit und Wohlergehen, Hochwertige Bildung, Geschlechter-Gleichheit, Sauberes Wasser und Sanitär-Einrichtungen, Bezahlbare und saubere Energie, Menschenwürdige Arbeit und Wirtschaftswachstum, Industrie, Innovation und Infrastruktur, Weniger Ungleichheiten, Nachhaltige Städte und Gemeinden, Nachhaltiger Konsum und Produktion, Maßnahmen zum Klimaschutz, Leben unter Wasser, Leben an Land, Frieden, Gerechtigkeit und starke Institutionen, Kein Hunger

Kursmodul

Titel des Bestandteils der Lehrveranstaltung	Mathematics for Economists 1
Code der Lehrveranstaltung	27356A
Wissenschaftlich-disziplinärer Bereich	STAT-04/A
Sprache	Englisch
Dozenten/Dozentinnen	Prof. Dr. Martin Meier, Martin.Meier@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/50913
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
KP	6
Verantwortliche/r Dozent/in	
Vorlesungsstunden	36
Laboratoriumsstunden	60
Stunden für individuelles Studium	
Vorgesehene Sprechzeiten	18
Inhaltsangabe	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.
Themen der Lehrveranstaltung	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.
Unterrichtsform	Lectures and exercise sessions.
Pflichtliteratur	Lecture notes provided in due course (available in the Reserve Collection).
Weiterführende Literatur	

Kursmodul

Titel des Bestandteils der Lehrveranstaltung	Mathematics for Economists 2
Code der Lehrveranstaltung	27356B
Wissenschaftlich-disziplinärer Bereich	STAT-04/A
Sprache	Englisch
Dozenten/Dozentinnen	Prof. Dr. Martin Meier, Martin.Meier@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/50913
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Zweites Semester
KP	6
Verantwortliche/r Dozent/in	
Vorlesungsstunden	36
Laboratoriumsstunden	60
Stunden für individuelles Studium	
Vorgesehene Sprechzeiten	18

Inhaltsangabe	In this course we study linear algebra and functions of several variables.
Themen der Lehrveranstaltung	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.
Unterrichtsform	Lectures and exercise sessions.
Pflichtliteratur	Lecture notes provided in due course (available in the Reserve Collection)
Weiterführende Literatur	