Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Financial econometrics
Code der Lehrveranstaltung	27505
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	SECS-P/05
Sprache	Englisch
Studiengang	Master in Data Analytics for Economics and Management
Andere Studiengänge (gem. Lehrveranstaltung)	Loaned from course 25423 – Master in Accounting and Finance (LM-77 AF)
Dozenten/Dozentinnen	Prof. Francesco Ravazzolo, Francesco.Ravazzolo@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/36066
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	1
KP	6
Vorlesungsstunden	36
Laboratoriumsstunden	-
Stunden für individuelles Studium	-
Vorgesehene Sprechzeiten	18
Inhaltsangabe	This work provides an introduction to the fundamentals of financial econometrics, bridging theoretical concepts with practical applications. We begin with the foundational principles of stochastic processes and the characteristics of financial assets, including an analysis of empirical "stylized" facts observed in financial data. The subsequent sections delve into various models for forecasting returns, such as Classical Linear Regression and

	Time-Series Analysis (e.g., ARMA models), as well as models specifically designed for volatility analysis and prediction, including ARCH and GARCH models. The text also covers macro-finance analysis, introduces Bayesian methods and Monte Carlo simulations, and explores special topics like cryptocurrency, energy markets, and bond markets.
Themen der Lehrveranstaltung	The course covers the tools of financial econometrics and empirical finance, with the focus on correlation analysis, classical linear regression and advanced time-series analysis. It introduces econometric modelling of financial prices and volatility, and estimation of some risk measures. Then, it extends to macro-finance problems. Strong emphasis is placed on the application of the models to real financial data.
Stichwörter	Stochastic Processes, Financial Time-Series Analysis, Volatility Modeling (ARCH/GARCH), Forecasting, Bayesian Analysis
Empfohlene Voraussetzungen	Basic knowledge of statistics
Propädeutische Lehrveranstaltungen	
Unterrichtsform	The course will combine in-class explanation of the background material, problem-solving and case discussions. Students will be expected to participate actively in class work, which will give them the opportunity to apply theoretical concepts to realistic situations.
Anwesenheitspflicht	Strongly recommended, but not required.
Spezifische Bildungsziele und erwartete Lernergebnisse	Knowledge and understanding: The student acquires specific knowledge of the economic and business domains of his/her interest and necessary to address decision-making and management issues in public and private organisations with an interdisciplinary perspective. In the Data Analytics for Economics pathway, knowledge will be oriented towards economic theory, economic analysis and econometrics through the development of micro- and macroeconomics, decision theory under conditions of uncertainty, time series analysis and forecasting techniques, methods for causal inference from both administrative and experimental data. Knowledge will also be oriented towards data analysis. In the Business Analytics track, the knowledge acquired will concern the tools necessary for analysing and interpreting business and organisational data, as well as

business economic measurements, business models and their evolution, tools and techniques to support decision-making, performance measurement systems consistent with digitisation and sustainability processes, the governance of marketing processes, with particular regard to digital and interactive marketing and the impact of digitisation on marketing activities.

Aapplying knowledge and understanding:
Ability to analyse business issues that characterise data-driven decision support through the application of statistical and computational models.
Ability to use and apply models for market analysis and economic policy formulation.

Making judgements:
Master's graduates will have the ability to apply the acquired knowledge to interpret data in order to make directional and operational decisions in an economic-business context.
Master graduates will have the ability to apply the acquired knowledge to support processes related to production, management and risk promotion activities and investment choices through the organisation, analysis and interpretation of complex databases.

Communication skills:
Master's graduates will be able to communicate effectively in oral and written form the specialised contents of the individual disciplines, using different registers, depending on the recipients and the communicative and didactic purposes, and to evaluate the formative effects of their communication.

Learning skills:
"MSc graduates should be familiar with the tools of scientific research. They will also be able to make autonomous use of information technologies to carry out bibliographic research and investigations both for their own training and for further education. In addition, through the curricular teaching and the activities related to the preparation of the final thesis, they will be able to acquire the ability
- to identify thematic links and to establish relationships between

	methods of analysis and application contexts; - to frame a new problem in a systematic manner and to implement appropriate analysis solutions; - to formulate general statistical-econometric models from the phenomena studied.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	Ability to perform all the mentioned econometric techniques by using appropriate software (MATLAB, PYTHON, R).
Art der Prüfung	Final Exam (50%): The final exam is a combination of problems, cases, and essay questions. Optional assignment (50%): Case studies will be assigned during the semester to be completed in writing and presented in class by groups of students. The questions included in the final exam are aimed at assessing the acquisition of knowledge and understanding the ability to apply them to new situations as well as to evaluate the skill of the student to analyse and report on complex business transactions. The case studies also measure the student's capability to search for the relevant regulatory and economic information that apply to a specific situation. If a student does not complete the assignment, the exam will weight 100%.
Bewertungskriterien	Final exam: 50% Assignment: 50% The student must pass the exam to have a passing grade in the course.
Pflichtliteratur	Selection of papers provided by the teacher.
Weiterführende Literatur	CFA Institute Curriculum 2018 edition, Level II, Readings 9-11. Koop G. (2003). Bayesian Econometrics. Wiley. Stock J.M. and Mark W. Watson, *Introduction to Econometrics.* Pearson International 3rd Edition. Diebold F. X. (2006). Elements of Forecasting. Mason 4th Edition.
Weitere Informationen	

Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung, Geschlechter-Gleichheit, Bezahlbare und saubere Energie, Maßnahmen zum Klimaschutz, Weniger Ungleichheiten, Nachhaltiger Konsum und Produktion, Menschenwürdige Arbeit und Wirtschaftswachstum