Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Financial engineering and quantitative investment strategies
Code der Lehrveranstaltung	27514
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	SECS-S/06
Sprache	Englisch
Studiengang	Master in Data Analytics for Economics and Management
Andere Studiengänge (gem. Lehrveranstaltung)	Loaned from course 25424 - Master in Accounting and Finance (LM-77 AF)
Dozenten/Dozentinnen	Prof. Dr. Peter Alfons Schmid, PeterAlfons.Schmid@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/44766
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	2
KP	6
Vorlesungsstunden	36
Laboratoriumsstunden	-
Stunden für individuelles Studium	-
Vorgesehene Sprechzeiten	18
Inhaltsangabe	The course introduces financial engineering and quantitative investment strategies. Main contents are quantitative methods, credit risk transfer, structured products, alternative investments, active management and investment strategies. As a result, you gain the knowledge and skills to solve real world quantitative finance problems.

Themen der Lehrveranstaltung	• Quantitative methods: Review of financial mathematics and modelling. • Credit risk transfer: Determination of credit risk and usage of instruments like credit default swaps, total return swaps, asset backed securities, etc. • Structured products: Development and pricing of products - based on equities and fixed income securities - that exhibit specific return, risk or other attributes. • Alternative investments: Fundamentals of the alternative investment space, especially real assets, private equity & hedge funds. Adding value through active management (absolute & relative returns, risk reduction through diversification). • Investment strategies: Theoretical foundation and empirical testing of trend following, and momentum strategies, fixed-income strategies and relative value & event driven strategies
Stichwörter	Credit risk transfer, structured products, alternative investments, investment strategies
Empfohlene Voraussetzungen	
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Lectures and empirical applications
Anwesenheitspflicht	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)	
Art der Prüfung	Students may opt between two different types of assessment: 1) Standard assessment for the course is an obligatory final written examination (100% of the final grade). 2) Moreover, there is the possibility of an optional assessment, where students write a project paper and have their performance assessed by both the project paper (50% of the final grade) and the obligatory final examination (50% of the final grade). The optional assessment is only available for attending students having notified the lecturer of their choice at the latest on the date of the 9thlecture. The optional course project can be done in groups of 2 students.
Bewertungskriterien	Theoretical knowledge of models and concepts covered in the class as well as knowledge of their empirical applications.
Pflichtliteratur	EN - Required readings Selected chapters from: • Financial Engineering and Computation: Principles, Mathematics, Algorithms by Y.-D. Lyuu, 2002, Cambridge University Press. • Principles of Financial Engineering by R. Kosowski and S.N. Neftci, 2015, Academic Press. • Alternative Investments: CAIA Level I, 4th edition, by D.R. Chambers, M.J.P. Anson, K.H. Black, H.B. Kazemi, 2020, Wiley Finance Editions.
Weiterführende Literatur	
Weitere Informationen	
Ziele für nachhaltige	Hochwertige Bildung, Nachhaltiger Konsum und Produktion,

Entwicklung (SDGs)	Industrie, Innovation und Infrastruktur, Menschenwürdige Arbeit und Wirtschaftswachstum