

Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Financial Trading and Algorithms
Code der Lehrveranstaltung	76424
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	ING-INF/05
Sprache	Italienisch
Studiengang	Bachelor in Wirtschaftsinformatik
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Dr. Paolo Coletti, Paolo.Coletti@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/6359
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	3
KP	6
Vorlesungsstunden	42
Laboratoriumsstunden	0
Stunden für individuelles Studium	108
Vorgesehene Sprechzeiten	
Inhaltsangabe	<ul style="list-style-type: none"> • Market economics and finance • Trading on electronic markets • Automated short-term trading strategies • Smart contracts and blockchain financial applications
Themen der Lehrveranstaltung	Markets: Economics and Finance – introduces the rules, micro-structure, and technical aspects of financial markets.

	<p>Trading on Electronic Markets – covers trading strategies based on analytical, heuristic, or statistical models.</p> <p>Automated Short-Term Trading Strategies – students develop strategies and algorithms to detect trading signals efficiently and rapidly.</p> <p>Financial Applications of Blockchain – introduces cryptocurrencies, blockchain technology, and the development of smart contracts on the Ethereum blockchain.</p>
Stichwörter	financial markets, trading, blockchain, smart contract
Empfohlene Voraussetzungen	Programming, the main algorithms and computer data structures.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Lectures, classroom examples, homework, homework discussion, student presentation.
Anwesenheitspflicht	Attendance is optional. All students have the option of skipping part of the examination by means of a test.
Spezifische Bildungsziele und erwartete Lernergebnisse	<p>The course is part of the attività formative affini o integrative.</p> <p>The course provides knowledge about the microstructure of financial markets, focusing in particular on technical aspects and trading algorithms. It gives the student the professional skills to work as a developer of automated trading algorithms.</p> <p>The last part of the course gives an insight into the current state of the art on blockchain technology, focusing on the development of smart contracts for the purpose of developing an automated exchange.</p> <p>Knowledge and Understanding</p> <p>D1.17 – Knowledge of additional Digital Finance methods and their application.</p> <p>D1.18 – Understanding of the interdisciplinary approach to IT projects, taking into account technical foundations, business needs, social and dynamic aspects, as well as the regulatory framework.</p> <p>Applying Knowledge and Understanding</p> <p>D2.3 – Ability to analyze business problems and develop solution</p>

	<p>proposals using information technology tools.</p> <p>D2.4 – Ability to formalize and analyze procedures and operational processes, and to identify and leverage optimization potentials.</p> <p>D2.6 – Ability to design, describe, and present IT solutions to decision-makers.</p> <p>D2.9 – Ability to support the management of IT departments and software companies by providing information based on specific needs.</p> <p>D2.11 – Ability to analyze large volumes of data on economic facts and processes.</p> <p>D2.13 – Ability to apply additional knowledge in the field of Digital Finance.</p> <p>D2.18 – Ability to communicate with clients in both written and spoken Italian at a professional level.</p> <p>Making Judgements</p> <p>D3.1 – Ability to collect and interpret data to form independent judgements on IT and economic aspects of information systems.</p> <p>D3.3 – Ability to compare and evaluate different IT solutions based on their technical characteristics and key business stakeholders.</p> <p>D3.4 – Ability to assess essential economic and business events based on numerical data.</p> <p>Communication Skills</p> <p>D4.1 – Ability to use three languages with technical terminology and an appropriate communication style.</p> <p>D4.2 – Ability to use modern means of communication, including remote interactions.</p> <p>D4.3 – Ability to negotiate with individuals from different professional backgrounds regarding the definition and requirements of business information systems.</p> <p>Learning Skills</p> <p>D5.2 – Learning ability to carry out strategic and IT-related project activities within business communities, including distributed ones.</p> <p>D5.3 – Ability to keep pace with rapid technological change and to learn emerging aspects of the field.</p>
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Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	Students are assessed through a final examination consisting of programming exercises and a written test on the theoretical material. A portion of the final exam may be replaced by a mid-term test, provided the student passes it.
Bewertungskriterien	<p>The final grade is calculated as 25% for the exam on the theoretical parts and 75% for the programming exercises. The weights may vary depending on the number of lecture hours dedicated to each part.</p> <p>In the evaluation of programming exercises and projects, particular emphasis will be placed on clarity, computational efficiency, and versatility.</p>
Pflichtliteratur	<p>No textbooks are used. For all lectures, a video is provided by the instructor prior to the class.</p> <p>Subject librarian: David Gebhardi, David.Gebhardi@unibz.it</p>
Weiterführende Literatur	
Weitere Informationen	<p>Software used:</p> <p>For the first part, Python will be used with Anaconda and Jupyter, although students may use their preferred IDE, such as the web-based Colab.</p> <p>For the second part, Solidity will be used with the web-based software Metamask and Remix as the IDE, although students may choose a different IDE if they prefer.</p>
Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung