

Syllabus

Course Description

Course Title	Big Data and Blockchain
Course Code	25418
Course Title Additional	
Scientific-Disciplinary Sector	ING-INF/05
Language	English
Degree Course	Master in Accounting and Finance
Other Degree Courses (Loaned)	
Lecturers	Dr. Paolo Coletti, Paolo.Coletti@unibz.it https://www.unibz.it/en/faculties/economics-management/academic-staff/person/6359
Teaching Assistant	
Semester	Second semester
Course Year/s	1
CP	3
Teaching Hours	24
Lab Hours	-
Individual Study Hours	-
Planned Office Hours	9
Contents Summary	The course focuses on: <ul style="list-style-type: none">- basic Python- using an LLM for automatically writing Python programs- major quantitative analysis of financial data- Python representations of data to correct and improve LLM-generated Python scripts- basic cryptocurrencies and blockchain technology
Course Topics	<ul style="list-style-type: none">- basic Python- using an LLM for automatically writing Python programs- major quantitative analysis of financial data

	<ul style="list-style-type: none"> - Python representations of data to correct and improve LLM-generated Python scripts - basic cryptocurrencies and blockchain technology
Keywords	Python, financial analysis, LLM code generation, blockchain, cryptocurrencies
Recommended Prerequisites	
Propaedeutic Courses	
Teaching Format	<p>3-4 hours on cryptocurrencies as a traditional frontal lecture with examples.</p> <p>2 hours on basic Python as an exercise lesson with examples that students must replicate.</p> <p>Rest of the course on generating code with LLM as laboratory course, where each student experiments on her own computer the effects of commands given to the LLM.</p>
Mandatory Attendance	Regular attendance is suggested, but not required
Specific Educational Objectives and Learning Outcomes	<p>Knowledge and understanding</p> <p>'Master's degree graduates should be able to acquire an advanced level of preparation that allows a thorough and integrated view of accounting and budgeting and planning and management control issues. These learning outcomes are achieved through an advanced knowledge and understanding</p> <ul style="list-style-type: none"> - of economic-financial communication to stakeholders in national and international contexts; - of economic-business models and performance measurement for planning and management control of internal and external audit models and methods. <p>Accounting courses will also enable graduates to acquire skills in specialised subjects that characterise the profession of chartered accountants and auditors."</p> <p>"Master's graduates should be able to acquire an advanced level of preparation that allows an articulated and integrated view of the finance issues of companies, financial intermediaries, financial institutions and markets. These learning outcomes are achieved through an advanced knowledge and understanding</p> <ul style="list-style-type: none"> - of the economic-financial planning and evaluation of new investments; - of the characteristics associated with extraordinary moments in corporate management, such as capital transactions, recourse to

	<p>financial markets, mergers and acquisitions, corporate crisis and reorganisation;</p> <ul style="list-style-type: none"> - the problems and techniques of the organisation and financial management of companies and financial intermediaries; - the fundamentals of corporate finance for the correct application of, for example, decision-making models and financial data and risk management to treasury management; - the management and economic models of the different types of intermediaries, market microstructure, the operational efficiency of financial markets and the impact of financial markets on the economic conditions of intermediaries; - a wide range of investment, financing and risk management instruments, starting with the fundamentals of portfolio diversification and classical asset pricing and risk measurement models; - of the specific finance issues that characterise the profession of Financial Analyst, Portfolio Manager, Chief Financial Officer (CFO), Chief Administrative Officer, Controller, Internal Auditor and business consultant." <p>"Master's graduates should be able to acquire an advanced level of preparation that allows for an articulated and integrated view of business management issues and of economic-quantitative, financial and legal disciplines. These learning outcomes are achieved through an advanced knowledge and understanding</p> <ul style="list-style-type: none"> - of the economic-business models and tools for the management of companies, whether family or small or of international dimension; - of the design and management of institutional and organisational structures inherent to corporate governance systems; - of business tools and processes developed to recognise, understand and guide change and manage the impact of a transition on the organisation; - of efficient communication strategies within the organisation and towards the various stakeholders. - of Management issues that characterise the profession of financial analyst, portfolio manager, risk manager and consultant." <p>"Master's graduates should be able to acquire a knowledge of economic-quantitative models that enable them to address the management issues of companies, financial intermediaries, financial institutions and markets. These learning outcomes are</p>
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	<p>achieved through an advanced knowledge and understanding</p> <ul style="list-style-type: none"> - of the theories and tools for the economic analysis of the company and the market; - of the basic forecasting models for carrying out integrated economic and financial analyses, also making use of econometric time series and multivariate analysis methodologies - of Big Data analysis techniques in order to support and integrate business decision-making processes." <p>Applying knowledge and understanding:</p> <p>Ability to apply knowledge in the area of Accounting for the analysis and solution of complex problems in national and international interdisciplinary contexts</p> <p>Ability to apply knowledge in the area of Accounting to develop and integrate the results of economic-financial communication into business decision-making models</p> <p>Ability to apply knowledge in the area of Accounting for the design and management of corporate restructuring and other extraordinary transactions</p> <p>Ability to apply knowledge in the area of Accounting in order to be able to dialogue and interact in a competent manner with the managers of the various corporate functional areas, with financial markets and with corporate and tax law professionals</p> <p>Ability to apply knowledge in the area of Finance to be able to carry out analysis of complex problems in a national and international interdisciplinary context</p> <p>Ability to apply knowledge in the area of Finance for the planning and realisation of corporate restructuring and other extraordinary operations</p> <p>Ability to apply knowledge in the area of Finance for the identification, evaluation and management of investments in financial markets</p> <p>Ability to apply knowledge in the area of Finance for the design of coherent financial management strategies in companies or financial intermediaries, competently applying acquired knowledge in risk management techniques, asset valuation, handling of derivatives</p> <p>Ability to apply knowledge in the area of Management for the critical analysis and formulation of solutions to complex problems in national and international interdisciplinary contexts in small or large organisations</p>
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	<p>Ability to apply knowledge in the area of management to integrate the results of economic and financial communication and quantitative data analysis into business decision-making models</p> <p>Ability to apply knowledge in the area of Management to frame and evaluate organisational situations and problems in a multidisciplinary perspective, integrating business, economic, legal, financial and statistical-mathematical disciplines</p> <p>Ability to apply knowledge in the area of Management to be able to dialogue and interact with the managers of the various company functional areas, with financial markets and with corporate and tax law professionals</p> <p>Ability to apply knowledge in the area of Law to assess and decide the legal form of the organisation, also in relation to interactions with its stakeholders</p> <p>Ability to apply knowledge in the area of Law to analyse and integrate legal and fiscal effects in the design and implementation of corporate restructuring operations and other extraordinary operations, also in an international context</p> <p>Ability to apply knowledge in the area of law to be able to dialogue and interact critically and competently with corporate and tax law professionals</p> <p>Ability to apply knowledge in the area of Economic Analysis to understand the evolution of financial markets and changes in the international macroeconomic environment</p> <p>Ability to apply knowledge in the area of Economic Analysis for the analysis of economic, managerial and financial variables supporting the decisions of companies and financial intermediaries</p> <p>Ability to apply knowledge in the area of Economic Analysis to be able to frame and evaluate situations and problems in a critical manner and based on scientific methods in a multidisciplinary perspective, thanks to a training that integrates business, economic, legal, financial and statistical-mathematical disciplines</p> <p>Making judgements:</p> <p>Ability to apply the knowledge acquired to make managerial and operational decisions and to solve problems in the administration and finance of companies, intermediaries and financial markets, jointly taking into account multiple perspectives of analysis, from the economic to the legal, financial, strategic, managerial.</p> <p>Ability to select data and use appropriate information to describe a</p>
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	<p>problem concerning the management of companies, intermediaries and financial markets.</p> <p>Ability to relate models and empirical evidence in the study of companies, intermediaries and financial markets.</p> <p>Communication skills:</p> <p>Ability to communicate effectively in oral and written form the specialised contents of the individual disciplines, using different registers according to the recipients and the communicative and didactic purposes, and to evaluate the formative effects of its communication</p> <p>Learning skills:</p> <p>"a) ability to use information technology autonomously to carry out bibliographical research and investigations and for one's own training and updating</p> <p>b) ability to identify thematic links and establish relationships between different cases and contexts of analysis</p> <p>c) ability to frame a new problem systematically and to generate appropriate taxonomies</p> <p>d) ability to develop general models from the phenomena studied;".</p>
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	<p>Acquired knowledge on blockchain and basic cryptocurrencies is evaluated through a written test. Acquired skills on the rest are tested through a practical exam on a real case.</p>
Evaluation Criteria	<p>15% of the grade comes from the written test. Particular emphasis is done on the explanation skills of the students and the knowledge of the topics.</p> <p>85% of the grade come from the practical test. The outcome of this test depends on the obtained results and, in particular, on the methodology used and the ability of the student to choose the right tools and to check the partial results produced by the computer.</p>
Required Readings	<p>Videos are provided for each lesson. No further reading is necessary.</p>
Supplementary Readings	

Further Information	
Sustainable Development Goals (SDGs)	Industry, innovation and infrastructure