

Syllabus

Course description

Course title	Financial Engineering and quantitative investment strategies
Course code	25424/27514
Scientific sector	SECS-S/06
Degree	Master in Accounting and Finance / Master in Data Analytics for Economics and Management LM-Data (curriculum Data Analytics for Economics)
Semester	tbd
Year	2024/2025
Credits	6
Modular	No

Total lecturing hours	36
Total lab hours	-
Total exercise hours	-
Attendance	Recommended, but not required.
Prerequisites	There are no general prerequisites.
Course page	https://www.unibz.it/en/faculties/economics-management/master-accounting-finance/course-offering/ https://www.unibz.it/en/faculties/economics-management/master-data-analytics-economics-management/

Specific educational objectives	<p>The course refers to the typical educational activities and belongs to the scientific area of Business Administration.</p> <p>The course provides coverage of important topics in modern Financial Engineering and Quantitative Finance at the advanced postgraduate level. Being a subject of truly multidisciplinary field involving financial theory, methods of engineering, tools of mathematics and elements of programming, it attempts to build a coherent picture and detailed understanding of current industry trends and methods used by sophisticated investment market players to earn abnormal returns and hedge risks.</p> <p>The course will enable the students to develop the theoretical knowledge and practical skills required for coping with various problems encountered in modern financial markets.</p>
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Lecturer	TBD
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Scientific sector of the lecturer	SECS-S/06
Teaching language	English
Office hours	TBD
Lecturing assistant	Not foreseen
Teaching assistant	Not foreseen
Office hours	
List of topics covered	<ul style="list-style-type: none"> • Quantitative methods • Structured products • Credit risk transfer • Introduction to alternative investments • Real assets • Trend-following and momentum strategies • Mean reversion strategies • Fixed income strategies • Relative value and event driven strategies
Teaching format	Lectures and applications in R.

Learning outcomes	<p><u>1) Knowledge and understanding:</u></p> <ul style="list-style-type: none"> • Knowledge of modern finance topics with advanced use of quantitative methods. • Understanding and knowledge of the tools necessary to estimate and manage financial markets perplexities. • Knowledge how to solve real world quantitative finance problems using R. <p><u>2) Applying knowledge and understanding:</u></p> <ul style="list-style-type: none"> • Analyze and solve complex portfolio problems. • Find the necessary literature and data to solve financial problems. • Being able to use R to solve problems of quantitative finance. <p><u>3) Making judgments</u></p> <ul style="list-style-type: none"> • Being able to choose the appropriate methods and techniques to be applied in various real-life situations common to the financial industry. <p><u>4) Communication skills</u></p> <ul style="list-style-type: none"> • Being able to communicate financial decisions based on empirical evidence. <p><u>5) Learning skills</u></p> <ul style="list-style-type: none"> • Being able to understand and find a solution for financial problems. • Identify and obtain the necessary data to be used as an input for problem-solving tasks.
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Assessment	<p>Final Exam (60%): The final exam is a combination of problems, result interpretation questions and essay questions.</p> <p>Project assignments (40%): Case studies will be assigned during the semester</p>
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	<p>to be completed in writing and presented in class by groups of students.</p> <p>The questions included in the final exam are aimed at assessing the acquisition of knowledge and understanding (Skill 1). The project assignments assess the ability to apply them to new situations as well as to evaluate the ability of the student to analyse and complex portfolio problems using R (Skills 2, 3 and 4). The case studies also measure the student's ability to search for the relevant regulatory and economic information that apply to a specific situation. Skill 5 is assessed indirectly because passing the final exam is possible by the autonomous execution of the class and home activities.</p>
Assessment language	English
Evaluation criteria and criteria for awarding marks	<p>Grade is the weighted average of the assessments, based (40% total) and final exam (60%). For nonattending students 100% of the final grade is given by the final exam. The grade in the exam is based on correct understanding, application of appropriate solution methods and correct interpretation of results consistently with the lectures. Assessment of the project will be based on clarity of presentation and ability to apply and interpret the correct methods in relation to well-defined empirical questions. A scientific text has to be produced and presented.</p>
Required readings	<p>Selected chapters from:</p> <ul style="list-style-type: none"> • Alternative Investments: CAIA Level I, 4th edition, by D.R. Chambers, M.J.P. Anson, K.H. Black, H.B. Kazemi, 2020. • Principles of Financial Engineering, 3rd edition, by Robert Kosowski and Salih N. Neftci, 2015.
Supplementary readings	Research papers will be provided during class.