

COURSE: QUANTITATIVE TRADING LAB

Adjunct Professor Domenico Dall'Olio

PROGRAMME

PART 1 – INTRODUCTION TO MODERN MARKETS

A modern approach to investments and trading: computer-based strategies. Meaning, risks and opportunities

How to choose what to trade and why: fundamental analysis vs technical analysis

How to properly manage trades: risk management, profit management, money management

Instruments available: a short outline

The magics of modern finance: leverage and short selling

PART 2 – FINANCIAL INSTRUMENTS

How stocks are traded: opening auctions, continuous phase, closing auction

The negotiation book

Order types: market, limit, conditional, multi-conditional, valid till date, fill or kill, iceberg

PART 3 – QUANTITATIVE TRADING STRATEGIES

What is quantitative trading and why is it important

The tools of quantitative trading: Microsoft Excel, Metastock, Multicharts

The phases of quantitative trading

Pros and cons of quantitative trading

Coding of a strategy

Backtesting of a strategy

Optimization of a trading strategy

Evaluation of a trading strategy

EDUCATIONAL OBJECTIVES

The primary objective of this course is to provide students with an idea of the evolution experienced by the world of investments in the last twenty years.

Quantitative trading is now a widespread reality in institutional circles, both in the field of the management of capital carried out by mutual investment funds, and in the field of the management of capital owned by banks, social security institutions, foundations and insurance companies.

Learning the fundamentals of this complex discipline is the first step of a path that goes through the acquisition of skills in the financial, mathematical, statistical, psychological and behavioral fields.

It is of paramount importance in this process to immediately understand how the playful aspect of trading must be immediately eliminated, in order to be able to move to a higher, call it professional, level.

It is my personal goal to make people understand the complexity of the subject and make students aware of how difficult the path is to be faced in order to enter this world with the right skills and with the right mental attitude.

EXPECTED LEARNING OUTCOMES

At the end of the course, students will have basic skills regarding the functioning of modern financial markets. They will be able to formulate, codify, test and optimize a trading strategy, as well as critically evaluate its advantages and risks.

COMPUTER PROGRAMS USED DURING THE COURSE

About a half of the Laboratory will involve computer programming and computer-based analysis. Compatibly with the objectives and timing of the course, it will not be possible to achieve particularly sophisticated results, but it will be clearly shown what today can be achieved thanks to computers and applications designed specifically for trading.

At some point of the course Excel and VBA will be used, as well as Metastock and Multicharts. For the latter it is possible to get a 1-month free licence via the site of the producer.

DETAILED LESSON PROGRAM

Lesson 1 – Hours 1-4

Introduction to modern financial markets: how to define an active approach starting from a quick summary of the results of the market portfolio theory and of the capital asset pricing model. The evolution of trading on-line. The eight steps of a trading strategy. The trade-off between time, profits and risks. Why risk is so important. How to properly define risk. Stock picking: the two ways to do the job. Technical analysis Vs fundamental analysis. Price charts.

Lesson 2 – Hours 5-8

Reading of price charts: trend analysis and basic strategies. Moving averages. Coding a first simple trading strategy based on moving averages. The first issue in MA-based trading: the pace of the average. How to inspect all the values and optimize the strategy.

Optimization of parameters: implications and problems. Use of Microsoft Excel for the backtesting of such a strategy. How to read a system report: main indicators, what to look at and how. The importance of quantitative trading for diversification of risks. Pros and cons of quantitative trading.

Lesson 3 – Hours 9-12

How markets work in the practice. How stocks are traded. Market phases. Opening auctions, continuous trading, closing auctions. Negotiation books. Order types. A quick look at the fleet of financial instruments available today. Instruments to absolutely avoid (and why). Why the transition from theory to practice is so complicated: all the ravines in which problems can lurk that make our efforts ineffective.

Lesson 4 – Hours 13-16

Critical analysis of some coded strategies.

Lesson 5 – Hours 17-20

Regulated options: the best instrument for diversification of strategies. Let's analyze some markets with a statistical eye. What advantages options bring with them. Opportunities and problems with quantitative options strategies. Case study: an analysis of an options trading strategy based on the observation of the typical behavior of different underlyings.

CALENDAR OF THE LESSONS will be defined in the second mid of March. Classes will be held remotely.

NUMBER OF ELIGIBLE STUDENTS: max. 40 students from 1st and 2nd year.

HOW TO APPLY

To submit your application, please send an email to mef@unimi.it specifying in the subject line the name of this lab.

Application deadline is **Tuesday 9th March 2021 h23:59 (CET)**.