

COURSE INSTRUCTOR

Nicholas H Hirschey

SHORT BIOGRAPHY

Nicholas Hirschey is an Assistant Professor of Finance at the Nova SBE, where he teaches in the Masters program. Previously, he was on the faculty at the London Business School. Professor Hirschey holds a Ph.D. in Finance from the University of Texas and B.A.'s in Mathematics and Economics from Grinnell College. His research interests include asset pricing, microstructure, and international finance. His current work studies the effect high-frequency traders have on liquidity, the impact popular institutional trading strategies have on stock price reactions to news, and retail trade markups in municipal bonds. More information can be found at www.nhirschey.com.

INSTITUTIONAL EMAILnicholas.hirschey@novasbe.pt**OFFICE HOURS**

Please send an email to make an appointment.

Scientific Area/Área Científica:	Finanças		
Frequency/Periodicidade:	Semestral		
Number of Contact Hours/ Número Horas Contacto:			
(T) Teóricas/Theoretical:	0000:00	(TP) Teórico-Práticas/Theoretical-Practical:	0000:00
(P) Práticas/Practical:	0000:00	(OT) Orientação Tutorial/Tutorial Orientation:	0000:00
(PL) Práticas Laboratoriais/Practical Labs:	0000:00	(S) Seminário/Seminar:	0000:00
Horas Dedicadas/Dedicated Hours:	0000:00		
Total Horas/Total Hours:	0000:00		

PREREQUISITE(S) / PRÉ-REQUISITO(S)

NA

COURSE UNIT AIMS

This course will teach you modern, high-performance computer programming for financial data analysis. You will learn to write your own custom computer code to analyze real stock and bond market data. We will use programming languages such as R and F# to construct trading strategies, form portfolios, and evaluate portfolio performance. The tools and techniques developed are most directly relevant to researchers at quantitative long-short investment funds, but they also have applications to a wide range of data science disciplines outside finance.

No prior computer programming experience is expected. We will start with the basics and get you up to speed quickly. But those new to programming should expect to devote a lot of outside-class time early in the course learning programming basics. I will provide links to extensive online tutorials to help.

COURSE SYLLABUS

2280 - Data Analytics for Finance, 0, 7 ECTS

Spring Semester

202021

You will already be familiar with many of the topics that we cover from your prior finance courses. The main difference with this class is that we will learn to apply the theory and techniques that you have seen using large data sets and scalable computer code.

COURSE UNIT CONTENT

Preliminary course outline (subject to change):

1. Programming basics, returns, and volatilities.
2. Volatility modelling and volatility timing strategies.
3. Stock market return predictability.
4. Constructing mean-variance efficient portfolios.
5. Factor models and factor hedging.
6. Estimating factor loadings.
7. Portfolio performance evaluation.
8. Advanced portfolio optimization.
9. Constructing trading strategies from a signal.
10. Testing trading strategies.
11. Constructing "Smart Beta" Portfolios.
12. Review

LEARNING OBJECTIVES

- A. Knowledge and Understanding
Understand how to practically implement many of the fundamental concepts from portfolio management using computer programming methods.
- B. Subject-Specific Skills
How to programmatically calculate various portfolio statistics such as returns, volatilities, optimal portfolio weights, and construct and test trading strategies.
- C. General Skills
Data analysis through statistical tests, graphing, and reporting.

DEMONSTRATION OF THE COHERENCE OF THE SYLLABUS WITH COURSE UNIT AIMS

The objective is to give students the tools necessary to answer common questions related to the construction and evaluation of investment portfolios. The course begins by showing how to calculate basic portfolio statistics. We move from there to progressively build skills for parameter estimation, prediction, and portfolio construction.

TEACHING AND LEARNING METHODS

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Lectures will consist of walk-throughs and discussion of example code demonstrating how to perform necessary calculations. This code is also provided to students so that they can study and experiment outside of class. Outside experimentation with the example code provided in class will be necessary for mastery of the course material.

DEMONSTRATION OF THE COHERENCE OF THE TEACHING METHODS WITH COURSE LEARNING OBJECTIVES

The course is based around the goal of teaching students independent and reproducible data analytics for finance. Thus the code-based instruction and final project assignment incorporating written report based on that analysis will directly teach students the necessary and required skills. As a consequence, knowledge as well as general and subject-specific skills will be developed.

DEMONSTRAÇÃO DA COERÊNCIA DAS METODOLOGIAS DE ENSINO COM OS OBJETIVOS DE APRENDIZAGEM DA UNIDADE CURRICULAR [PT]

ASSESSMENT

Your grade will be based on a mid-term exam and a final project. The date of the mid-term exam is still to be determined.

The final course grade is a weighted average of these two components using these weights:

Mid-term Exam: 35%

Final project: 65%

BIBLIOGRAPHY

There is no required book for the course. Additional reference material relevant to each lecture subject will be added to the course area in due time.

ADDITIONAL INFORMATION

Course Impact Relation

Throughout the teaching period, the course equips students with foundational skills that will enable them to develop further understanding in future courses, directly related with the SDG Agenda.

