Course Description

The objective of this course is to undertake a rigorous study of the empirical foundations of modern financial economics. In the past few decades, the finance profession has turned into data science. There has been an extraordinary growth in the use of quantitative methods in the analysis of various asset classes; be it equities, fixed income securities, commodities, currencies, derivatives, and especially stock return predictability.

In response, financial economists, along with mathematicians and statisticians, have routinely been developing advanced techniques to understand the dynamics of asset pricing, market anomalies, equity premium predictability, asset allocation, security selection, volatility, correlation, and the list goes on.
This course attempts to provide a deep understanding of such topical issues. I will also briefly touch upon topics in machine learning. Machine learning is an extensive topic that requires its own course. Nevertheless, I will describe the philosophy of machine-learning methods and especially explain how to implement Neural Networks which is the basis for deep learning.

The course targets advanced master-level and PhD students in finance and economics. Required: prior exposure to matrix algebra, distribution theory, Ordinary Least Squares, as well as skills in computer programming beyond Excel. The most recommended programming software is Python.

The course covers the central themes of empirical asset pricing including the cross section of stock returns asset pricing tests, market anomalies, rational versus behavioral perspectives of asset pricing, estimating methods such as Ordinary Least Squares, Maximum Likelihood, Method of Moments, and machine learning.

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**Course Goals**

Upon completion of this course, students will acquire the understanding of several major empirical methods in asset pricing and portfolio management.

While some of you have already got exposure to topics such as mean variance analysis, preferences, and capital asset pricing model (CAPM), the content of this course considerably exceeds in both depth and breadth topics studied in previous courses. While this is a Ph.D. level course, it targets highly gifted master level students who can be enthusiastic about understanding deep asset pricing theories and with sufficient quantitative background, as noted earlier.

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**Grading**

30% - Class participation
70% - Homework

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**Lecturer Office Hours**

We will have six meetings altogether. Each class will consist of a lecture. For the class to be interesting and stimulating, active participation of students is important. I expect students to ask meaningful questions related to the material studied in class as well as current finance issues, and to answer my own questions and questions raised by fellow students.

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**Teaching Assistant**

Shachar Weidberg
Additional Notes

We will have two homework assignments throughout the course. Students have to turn in each assignment at the beginning of the class in which it is due. You can work in groups of up to two students per group. Late assignments will not be accepted.

If you find it hard to write your assignments in English, you can submit them in Hebrew.

Reading List