

Course outline

MFE Elective, Forecasting & Financial Time Series
Part I: High-Frequency Forecasting

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Course outline: overview

This course: MFE Forecasting & Financial Time Series, Part I on High-Frequency Forecasting

Overall target: Provide **practical guidance** on:

- data analysis and forecasting (application of theories).
- producing quantitative reports in a professional setting.

Aims of Part I:

- Illustrate key features of HF data analysis. (Highlight key differences from low-frequency data analysis.)
- Cover statistical techniques useful for HF data analysis.
- Develop useful programming skills for mathematical computing.

Main focus is on application, practicality, and mathematical computing.

Prerequisite: MFE Financial Econometrics. Good coding skills.

Course outline: lecture content

Part I topic: HF volume prediction.

- = An extension of univariate volatility models
- Study one HF volume prediction model
- Learn how the model fits in the HF literature

Lecture content:

- Stylized features of high-frequency financial data. (Week 1.)
- Model definition and properties. Context in the HF literature. (Week 1-2.)
- In-sample estimation and model selection. (Week 2-3.)
- Out-of-sample performance evaluation. (Week 3-4.)

Weekly structure: 2 hours lectures + 1 hour MATLAB.

Course outline: assessment

Assessment: A project on financial forecasting. (50% of the elective.)

- simulate a quantitative assignment given in a work environment in banking and finance.
- platform for practicing writing quantitative reports **concisely**.

Project content: you will be asked to outline a high-frequency model for forecasting a selected equity trade volume, and assess the quality of the forecasts. The data (and some useful Matlab codes) will be provided.

Output: a short report (approx. 10 pages) summarizing the project outcomes AND the codes used for producing the output.

Expectations: Largely replicate (and thus illustrate your mastery of) the lecture content. Please write all words and codes yourself. Please submit your own report. BUT you can help each other.