Computational Finance in Python

Universität Tübingen

Dr. Thomas Schön

Summer term 2025

Regular Assessment

assessment_notebook.ipynb

Scope:
- implement 3 trading signals in pre-defined notebook
- reasonable statistics
- reasonable graphs

Requirements:
- assessment_notebook: needs to be able to run stand alone on another computer
- explanations / formulas: need to be written in LaTeX
- delivery deadline: **29.06.2025 EOD**
- to thomas.schoen@schoen.finance

research_notebook.ipynb module.py

Scope:
- provide empirical evidence for your trading signals and their parameters: no pre-defined notebook available
  → write your own notebook and module
- reasonable statistics
- reasonable graphs

Requirements:
- research_notebook: needs to be able to run stand alone on another computer
- module: encapsulate reusable functions and use them in both notebooks
- explanations / formulas: need to be written in LaTeX
- delivery deadline: **29.06.2025 EOD**
- to thomas.schoen@schoen.finance

live demo / presentation

Scope:
- your delivered Jupyter notebooks (without modifications)

Requirements:
- 20min presentation
- 10min defense
- assessment date: **02.07.2025**
- **attendance is mandatory for every group member**

100% of course grade
100% group work

ERASMUS Assessment

assessment_notebook.ipynb

Scope:
- implement 3 trading signals in pre-defined notebook
- reasonable statistics
- reasonable graphs

Requirements:
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- explanations / formulas: need to be written in LaTeX
- delivery deadline: **29.06.2025 EOD**
- to thomas.schoen@schoen.finance

research_notebook.ipynb
module.py

Scope:
- provide empirical evidence for your trading signals and their parameters: no pre-defined notebook available
  → write your own notebook and module
- reasonable statistics
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Requirements:
- research_notebook: needs to be able to run stand alone on another computer
- module: encapsulate reusable functions and use them in both notebooks
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- to thomas.schoen@schoen.finance

100% of course grade
100% group work

Assessment Type Overview

regular students and double-degree students
(degree seeking in Tübingen):
regular assessment only

incoming ERASMUS students:
ERASMUS assessment only

all other incoming exchange students:
regular assessment or ERASMUS assessment
(please specify in your registration)

Assessment Hints

assessment_notebook.ipynb
research_notebook.ipynb
module.py

NumPy only / no built-in functions of other libraries allowed
- Good code: only use NumPy functionalities for your numerical computations
- Bad code: use built-in functions of other libraries like Pandas such as rolling(window=n).mean() that are not transparent regarding the computational steps

Reusability of your code
- Good code: write few functions that you can reuse as often as possible, reducing the lines of code; include these functions in module.py and import the module into both notebooks to reuse its functions there
- Bad code: copy and paste existing code functions into multiple spots in your code, increasing the lines of code artificially; no use of module.py

Readability of your code
- Good code: create namings for variables and functions that are self-explanatory
- Bad code: name variables and functions in a non-obvious way

Comments in your code
- Good code: write comments for providing context that is not provided by namings
- Bad code: there are no comments in your code

live demo / presentation

Explain the economic reasoning behind your code
- Why did you implement a particular signal
- Why did you choose a specific stock / data set (in-sample / out-of-sample data sets)
- Why did you choose a particular approach to calibrating parameters

Provide convincing evidence and results
- Explain the parameters and outcomes of your strategy economically and why your strategies are beneficial to a potential investor
- Present well-formatted graphs and plots
- Present convincing parameters and tables

Full explanation within 20min presentation
- Explain both notebooks within 20min of presentation
- Focus on the above mentioned hints

Don‘t explain your code lines
- The quality of your code will be assessed before your presentation
- Don‘t explain any code lines in your presentation

hints are not exhaustive
non-mentioned aspects also make up for the grade

Assessment without GitHub Copilot

- All code has to be written by the groups themselves
- **It is recommended to register for the assessment without GitHub Copilot**
- Group work starts on 13.05.2025
- **You are not allowed to use AI tools such as GitHub Copilot, ChatGPT or Aleph Alpha**

IN CASE OF ANY
ATTEMPTS OF DECEPTION
(„TÄUSCHUNGSVERSUCHE“)
THE GROUP PERFORMANCE
WILL BE EVALUATED WITH 5,0

Assessment with GitHub Copilot

- All code has to be written by the groups themselves
- You will be given instructions for using Copilot via email on 13.05.2025
- Group work starts on 13.05.2025
- **You are allowed to use GitHub Copilot but no other AI tools**

IN CASE OF ANY
ATTEMPTS OF DECEPTION
(„TÄUSCHUNGSVERSUCHE“)
THE GROUP PERFORMANCE
WILL BE EVALUATED WITH 5,0

Registration

- has to include all required information (otherwise you can‘t participate)
- possible **only via form**: https://forms.gle/daEQZDe6ATqU2FSd7
- possible until **11.05.2025 EOD**
- process is GDPR compliant

YOUR REGISTRATION IS IMMEDIATELY BINDING

IF YOU LEAVE THE ASSESSMENT AFTER A BINDING REGISTRATION YOUR PERFORMANCE WILL BE EVALUATED WITH 5,0