

Financial Time Series – Information

Annika Lang & Mike Pereira

TMS088/MSA410 – March 2021



CHALMERS
UNIVERSITY OF TECHNOLOGY



UNIVERSITY OF
GOTHENBURG

Mathematical Sciences, Chalmers University of Technology & University of Gothenburg, Sweden

- Mathematical *introduction to time series* with applications in finance.

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 - Mixed Bachelor/Master course
 - Knowledge of basic probability theory expected
 - Knowledge of stochastic processes is recommended
 - Expected that students are familiar with the material of the introductory chapter in the lecture notes

- In-depth cover of linear time series
 - Forecasting
 - Parameter estimation
 - Data preprocessing
- (G)ARCH models
 - Existence and uniqueness
 - Parameter estimation
- Non-linear models and nonparametric methods for model fitting

- Video lectures $\approx 4 \times 45$ minutes per week (Andreas Petersson, 2020) + digital lecture notes
- Discussion sessions on video and lecture note content (see TimeEdit)
 - Tuesday, 10.00 – 11.45
 - Thursday, 13.15 – 15.00

Structure

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 - Tuesday, 10.00 – 11.45
 - Thursday, 13.15 – 15.00
- Exercise sessions (Mike Pereira): Online help (video and chat) on Friday mornings (8am - 12pm) and video solutions posted right after
- Course home page and discussion board

Structure

- 2 *projects* with implementation of taught methods (bonus points)
 - No “click the button” course.
 - Emphasis on understanding of 1) theory and 2) foundations of algorithms.
 - Encouraged to work in groups of (up to) 2.
 - Up to 8 bonus points in total (on a 60 point exam).

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 - Project 1 is due on 23/4.
 - Project 2 is due on 26/5.
 - *Read* the details on how to hand in *carefully* in the project description.
 - $\text{\LaTeX}$
 - Notebooks: Matlab Live Editor (or Rstudio's RMarkdown)

- The final *exam* is on *Friday, June 4, 14.00 – 18.00*.
 - Originally a sit-down exam
 - No information yet if on campus or distance with Zoom monitoring
 - The exam counts 7.5 hp.
 - Bonus points from the projects are valid for this exam and the next two re-exams.

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 - You are allowed to bring *4 pages* (e.g., 2 pages double-sided) of *handwritten* notes and a simple calculator.

Student representatives

- TKIEK albin.j_99@hotmail.com Albin Jönsson
- GU gusnydal@student.gu.se Albin Nydén
- TKIEK eriko.waldstam@hotmail.com Erik Waldstam
- MPCAS jakbru@student.chalmers.se Jakob Bruchhausen
- MPENM soms@student.chalmers.se Siddhant Som

- A list of used and *recommended books* can be found on the *homepage*.

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- Comments and corrections for the lecture notes are always welcome to improve them.