

Group Assignment: Forecasting Methods

Duration: 2 weeks (during the break)

Group size: 3–5 students

Timeline

- Work period: 2 weeks (during break)
- Submission deadline: 8th December, 2025
- Presentations in class: 9/11th December, 2025

Structure

Each group must collect their own dataset (minimum 500 observations, daily, monthly, quarterly, or annual data). You must apply the following methods:

1. Time series decomposition (trend, seasonality, irregular components).
2. Regression analysis to estimate trend and smoothing components.
3. Moving averages and exponential smoothing.
4. Seasonal adjustment models: additive and multiplicative decomposition.

Data Requirements

- Data must be collected independently.
- Do not buy data set.
- Provide the original source link and the raw file.
- Examples of suitable data: GDP, unemployment rates, stock prices, climate series, retail sales, electricity consumption, tourism figures, etc.

Short Paper Structure

Each group must submit:

1. Short written Report (3 pages)

- Introduction: motivation, why this dataset.
- Data description: source, variables.
- Methodology: application of the listed methods.
- Results: Plots, error measures (e.g., RMSE, MAPE).
- Discussion: comparison of methods, interpretation.
- Conclusion: lessons learned, limitations.

2. Group Presentation (10 minutes)

- Each member must contribute.
- Include clear visualizations (plots, decomposition, forecasts).
- Be ready to answer questions about your work.

3. Submission Format

- Send short paper by email at ***abigail.asare@uol.de*** with group members in CC.
- Paper can be submitted in pdf, doc, tex, Rmd, quarto etc.
- Other files (e.g., Rscripts, dataset zipped) should be submitted or a link should be provided to access data.
- Presentation slides should also be submitted.

Restrictions

- No use of AI tools (e.g., ChatGPT, Copilot) in writing or coding.
- All analysis must be carried out with R studio.
- You must show intermediate steps and calculations, not just final results.