Time Series Analysis Project

Due at 23:55 on Sunday 25th of April through Moodle.

Summary

This continuous assessment will contribute 35% towards the final mark for this module.

You are required to submit your proposed dataset and a brief description of the project to Moodle before 23:55 on 21st March. There may be a review meeting with each student in the week beginning 22nd March to establish the suitability of the chosen project.

The Python files and report showing findings must be submitted through Moodle before 23:55 on 25th April.

Outline

This is a joint project with Data Architecture. You will be using the same dataset for both.

For Time Series Analysis, you are required to source a dataset suitable for time series analysis. The dataset should be cleaned and formatted appropriately. Use time series analysis techniques to visualise the data, perform a diagnostic analysis and carry out informed predictions. Note that there may be a short interview on your report in the days following submission. This can be done via Zoom if required.

Description

Your report should include the following sections (you can add other sections if you like):

1. Data description: This should include a brief discussion of the data and variables of interest, and details of any data cleaning done.
2. Descriptive statistics and data visualisations: Exploratory analysis of the dataset.
3. Research questions and methods: Discuss potential research questions that can be answered using this data based on the exploratory analysis. Also discuss the methods that will be used. You should include references where appropriate.
4. Results: This section should include time series analysis that helps answer the research questions identified. This can include modelling, model testing, and prediction. Explain your choice of models, discuss whether they are appropriate, and interpret your results.
5. Conclusions: Discuss the main findings of your analysis.

Deliverables

Submit the Python script (as a separate .py file) and report your findings in a Word or PDF document as described above. Code should be well commented throughout.

Marking Scheme

Data description: 10%

Visualisations and descriptive statistics: 10%

Research questions and methods: 10%

Analysis/results: 50%

Conclusions: 10%

Report structure and clarity: 10%

Rubric

Grade (%)	Description
80+	Report demonstrates mastery of subject matter with novel/original work applied to a complex problem. Data is imported correctly and has been appropriately structured. Visualisation of data is accurate, complete, thoroughly explained, and appropriate with clear link to aims. Analysis is accurate, complete, thoroughly explained, and appropriate with clear links to theory. Analysis clearly shows original thinking through theories and application beyond what was learned in course. Research is thoroughly explained with obvious relevance to problems. Document is well-structured and writing is of a high standard.
70-79	Report demonstrates thorough understanding of subject matter. Data is imported correctly and has been appropriately structured and manipulated. Analysis is accurate, complete, thoroughly explained, and appropriate. Research is thoroughly explained with obvious relevance to research questions. Document is well-structured and writing is of a high standard.
60-69	Report demonstrates good understanding of subject matter. Data is imported correctly and has been appropriately structured and manipulated. Visualisations are effective and the analysis largely deliver on the aims of the project. Implementation is to a large extent based on example applications provided in lectures but is well coded demonstrating clear understanding of concepts and application. May be missing some appropriate analysis and may be minor technical issues. Document is reasonably structured, substantially complete and well delivered.
50-59	Report demonstrates reasonable understanding of subject matter. Data has been imported, treated and structured in a manner which is effective but with minor issues. Visualisations and analysis are linked to aims but contain

	some ineffective or inappropriate elements and misses some key objectives. Analysis is very closely related to applications provided in lectures. Document is adequately structured, mostly complete and reasonably well delivered.
40-49	Report demonstrates partial understanding of subject matter. Analysis is basic, and missed key elements. Research is poorly explained with some relevance to problems. Poor link to aims and objectives. Document missing some key elements and poorly written.
30-39	Project element demonstrates very little understanding of subject matter. Little evidence of exploration of problem. Research is very poorly explained with minimal relevance to problems. Documentation poor and missing significant elements.
0-29	Project element demonstrates almost no understanding of subject matter. No serious attempt to address the problem.

Plagiarism

PLEASE PAY SPECIAL ATTENTION TO THE ISSUE OF PLAGIARISM. The DkIT policies are available at
https://www.dkit.ie/system/files/academic_integrity_policy_and_procedures.pdf
in summary, all work submitted by learners for assessment purposes, or for written or oral publication, must be their own work. Where this is informed by the work of others, the source must be properly referenced using the accepted norms and formats of the appropriate academic discipline.

Late Submission

The policy for late submission is available at the link below. Any legitimate late submission must be accompanied by explanation and supporting documentation as per the policy.
https://www.dkit.ie/system/files/continuous_assessment_procedures_document_v4.pdf